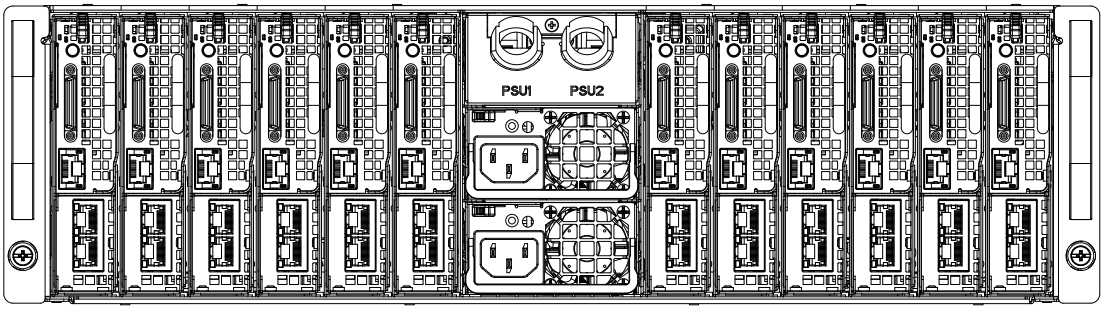
SUPERSERVER

MicroCloud
5038ML-H12TRF



USER'S MANUAL

Revision 1.0

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Release Date: August 9, 2013

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5038ML-H12TRF. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 5038ML-H12TRF is a 12-node, MicroCloud server system based on the SC939H-R1K63BP 3U chassis and 12 X10SLE-F motherboards. Please refer to our web site for an up-to-date list of supported processors.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the system and describes the main features of the Super X10SLE-F motherboard and the SC939H-R1K63BP chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the server into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: Standardized Warning Statements

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5038ML-H12TRF.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the X10SLE-F motherboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC939H-R1K63BP 3U server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

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Appendix A BIOS Error Beep Codes

Appendix B System Specifications

Chapter 1

Introduction

1-1 Overview

The SuperServer 5038ML-H12TRF is a 12 node, MicroCloud server system comprised of the SC939H-R1K63BP 3U chassis and 12 X10SLE-F motherboards. Please refer to our web site for information on operating systems that have been certified for use with the 5038ML-H12TRF (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components have been included with the 5038ML-H12TRF, as listed below:

- Four chassis fans (FAN-0145L4)
- One passive heatsink, each node (SNK-P0047PSR)
- One air shroud, each node (MCP-310-93901-0B)
- One 55-cm 30AWG cable, each node (CBL-0488L)
- One 70-cm 30AWG cable, each node (CBL-0489L)
- One 11.5-cm KVM/SUVI 30/28AWG dual USB cable, each node (CBL-0218L)
- One MicroLP module, each node (AOM-CGP-I2M)
- One rail kit (MCP-290-41803-0N)

Optional parts for 2.5" HDD support:

- One 2.5" HDD mounting kit for the SC939, each node (MCP-220-93903-0N)

Note: a complete list of safety warnings is provided on the Supermicro web site at http://www.supermicro.com/about/policies/safety_information.cfm

1-2 Motherboard Features

The 5038ML-H12TRF includes a total of 12 X10SLE-F single processor motherboards, which are based on the Intel C224 PCH chipset. Each motherboard constitutes a node in the system. Below are the main features of the X10SLE-F. (See Figure 1-1 for a block diagram of the chipset.)

Processors

Each X10SLE-F supports a single Intel® Xeon® E3-1200 v3 processor (up to 80W) or 4th Gen Core i3, Pentium®, Celeron® processor in an LGA 1150 socket (Socket H3). Please refer to the motherboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

Each X10SLE-F has four DIMM slots that can support up to 32 GB of ECC DDR3-1600/1333 UDIMM (Unbuffered), VLP (Very Low Profile) memory. This equates to a maximum of 384 GB for the system. Memory modules of the same size and speed should be used. See Chapter 5 for details.

SATA

A SATA controller integrated into the chipset provides a four-port SATA 3.0 subsystem on each node. Each node supports two 3.5” SATA 3.0 HDDs or four 2.5" SATA 3.0 hard drives.

Rear I/O Ports

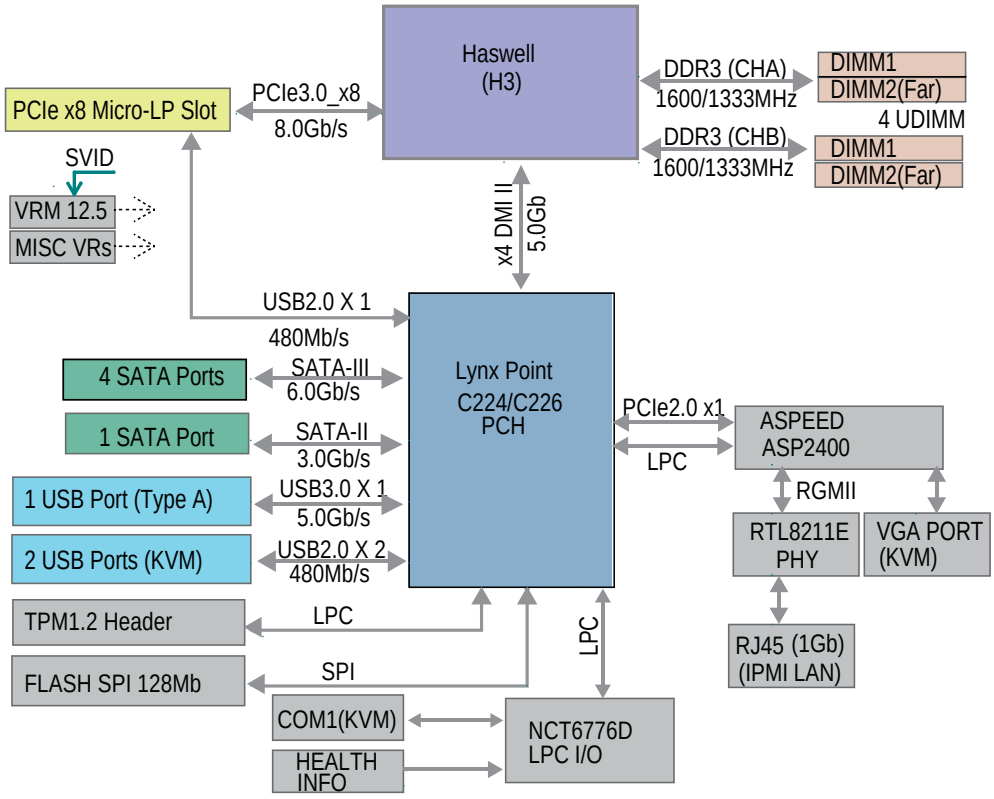
The rear I/O panel on each node includes one KVM connector, two Gb Ethernet LAN ports, one dedicated IPMI LAN port, a power LED and buttons for UID (Unit Identification) and power.

IPMI

IPMI (Intelligent Platform Management Interface) is a hardware-level interface specification that provides remote access, monitoring and administration for Supermicro server platforms. IPMI allows server administrators to view a server’s hardware status remotely, receive an alarm automatically if a failure occurs, and power cycle a system that is non-responsive. Each node features IPMI 2.0 with KVM over a dedicated LAN port.

Figure 1-1. Intel C224 Chipset:
System Block Diagram

Note: This is a general block diagram. See Chapter 5 for details.



1-3 Server Chassis Features

The following is a general outline of the main features of the SC939H-R1K63BP server chassis.

System Power

The SC939H-R1K63BP features a redundant 1620W high-efficiency power supply comprised of two separate power modules. This power redundancy feature allows you to replace a failed power supply without shutting down the system.

Cooling System

The SC939H-R1K63BP chassis includes four 9-cm fans located at the rear of the chassis. Each node also has an air shroud to channel the airflow from the system fans to efficiently cool the components that generate the most heat. See Chapter 6 for details.

1-4 Contacting Supermicro

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Web Site:	www.supermicro.com.tw

Technical Support:

Email:	support@supermicro.com.tw
Tel:	+886-(2)-8226-3990

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter outlines the procedure to set up your system and install it to a rack. If your system is not already fully integrated with a motherboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the system was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The server may have come with hardware to mount the system into a server rack. If mounting to a rack with the rail kit, follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

2-4 Warnings and Precautions

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from it.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug drives and power supplies to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

Warning! To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

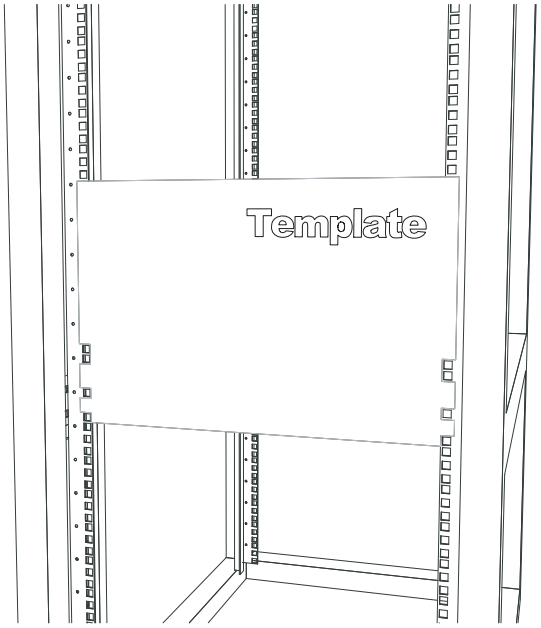
2-5 Installing the System into a Rack

Use the procedure below for installing the system to a rack.

1. Decide where you want to place the system into the rack (see "Rack Mounting Considerations" in the previous section).

2. Position the template at the front of the system to determine the locations of the screws for the chassis rails (see Figure 2-1).

Figure 2-1. Positioning the Template

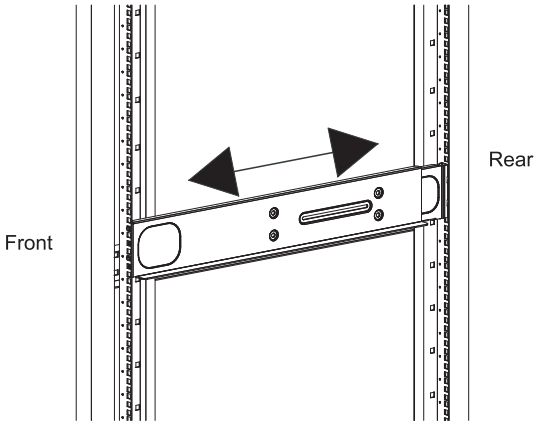


3. The two rail sections are screwed together to keep them immobile during shipping. Release these screws just enough to allow the rails to slide apart. Note the arrow on the rail, which indicates the end that attaches to the front of the rack.

4. Slide the rails apart far enough to match the depth of the rack. Position the rails with the template and secure the front of each to the front of the rack with two flathead screws, then secure the back of each rail to the rear of the rack with two flathead screws (see Figure 2-2). Note that the rails are left/right specific and very heavy.

5. (Optional step) Add the front left and right handles to the chassis using screws to secure each handle. Install a thumbscrew through the bottom hole of each handle.

Figure 2-2. Securing the Rails to the Rack



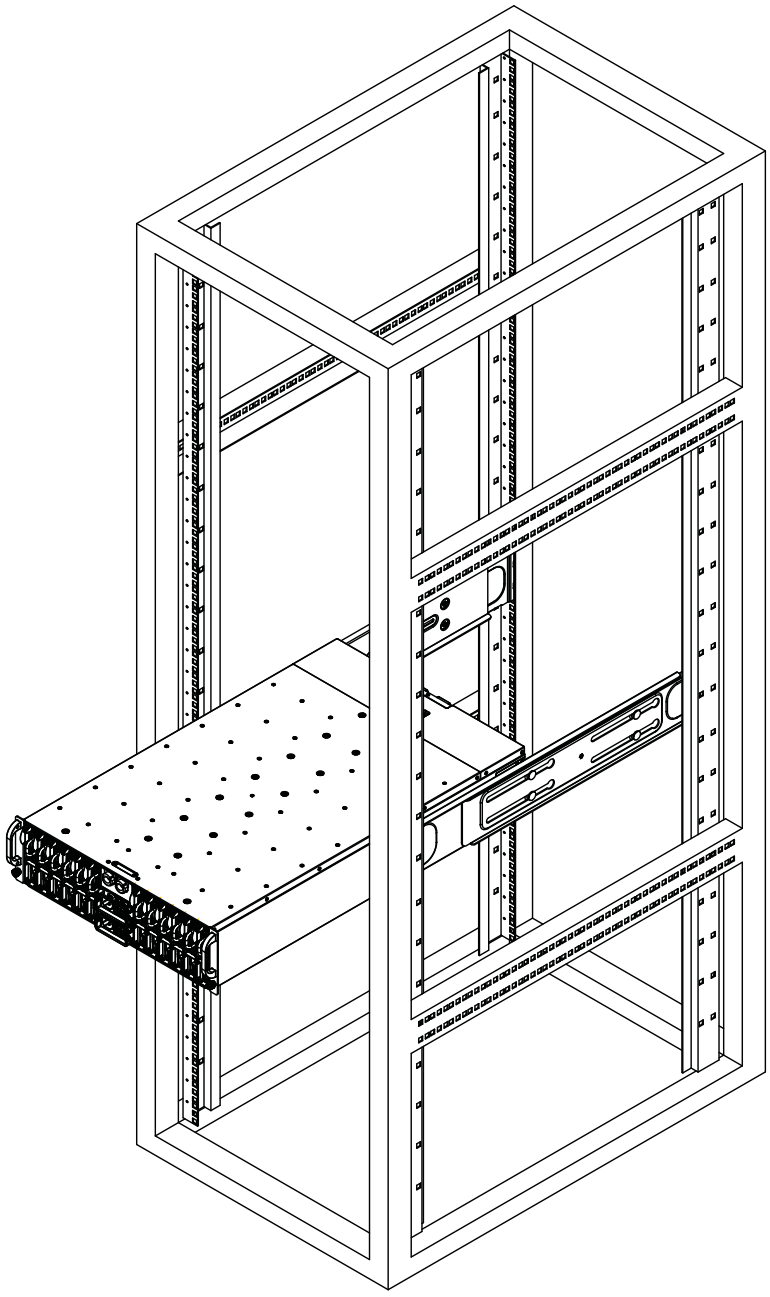
Note: These handles are optional and need only be installed when mounting the system into a short rack. When mounting into a deep rack, they are unnecessary and regular screws should be used instead of thumbscrews.

6. With one person on either side, lift the system and slide it into the installed rails.

7. After pushing the enclosure all the way into the rack, use two roundhead screws on each side of the server to lock it into place.

Warning: do not pick up the server with the front handles. They are designed to pull the system from a rack only.

Figure 2-3. Installing to the Rack



Note: this figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Chapter 3

System Interface

3-1 Overview

LEDs are included on the serverboard nodes and the power supply modules to keep you informed of their operational status. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Motherboard Nodes

Power Button/LED

The main power button on each of the nodes functions as both an on/off switch and as an LED. Pressing the button will alternately power on or remove power from the node. See the table below for the LED indications.

LED Appearance	Description
Green	The node is powered on and operating normally
Solid Red	The node is detecting an overheat condition
1Hz Blinking Red	The node is detecting a fan failure
.25Hz Blinking Red	The node is detecting a power failure
No Illumination	The node is powered down

Figure 3-1. Node LED Indicator

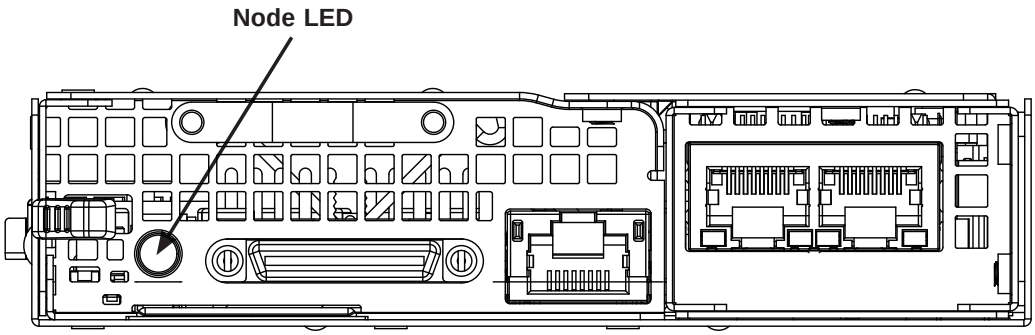
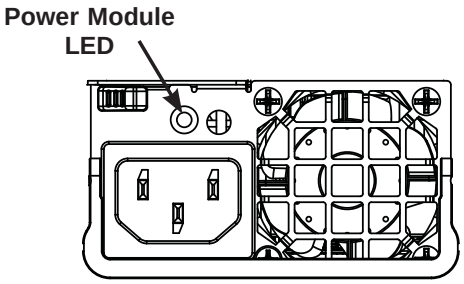


Figure 3-2. Power Supply Module LED Indicator



3-3 Power Supply Modules

Power Module LED

Each of the power supply modules has its own LED to indicate the status of the module.

LED Appearance	Description
Green	The power module is on and operating normally.
Amber	The system is off, the power module is not turned on or needs service.
Off	AC power is not connected to the power module or the module needs service.

Chapter 4

Standardized Warning Statements for AC Systems

4-1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our web site at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition

Warning!

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

Warnung

WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .
قبل أن تعمل على أي معدات،كن على علم بالمخاطر الناجمة عن الدوائر
الكهربائية
وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

Installation Instructions

Warning!

Read the installation instructions before connecting the system to the power source.

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告
将此系统连接电源前,请先阅读安装说明。

警告
將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

Circuit Breaker

Warning!

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告
此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V,20A。

警告
此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於250V,20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנה למניעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני זרם יתר שנועד לשמש במעגל זה הוא בעל דירוג לא גבוה מ-250 V, 20 A.

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة التي تم تثبيتها في المبنى
تأكد من أن تصنيف الجهاز الواقي ليس أكثر من: 250V, 20A

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 220V, 20A.

Power Disconnection Warning

Warning!

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、
システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de systéme.

אזהרה !

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل
الوصول إلى المناطق الداخلية للهيكل لتثبيت أو إزالة مكونات الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 새시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

Equipment Installation

Warning!

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

機器の設置

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה !

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتركيب واستبدال أو خدمة هذا الجهاز

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

Restricted Area

Warning!

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזור עם גישה מוגבלת

אזהרה !
יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת כלי אבטחה בלבד (מפתח, מנעול וכד׳).

تم تخصيص هذه الوحدة لتركيبها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
قفل ومفتاح أو أي وسيلة أخرى للالأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

Battery Handling

Warning!

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告
电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

警告
電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

אזהרה !
קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك
استبدال البطارية
فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة
تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontploffingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

Redundant Power Supplies

Warning!

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein trom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אם קיים יותר מספק אחד

אזהרה !

ליחדה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

Backplane Voltage

Warning!

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

バックプレーンの電圧
システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。
修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

מתח בפנל האחורי

אזהרה !
קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.

هناك خطر من التيار الكهربائي أوالطاقة الموجودة على اللوحة
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생합니다. 서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

Comply with Local and National Electrical Codes

Warning!

Installation of the equipment must comply with local and national electrical codes.

地方および国の電気規格に準拠
機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y nacionales.

Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

תיאום חוקי החשמל הארצי

אזהרה !
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

Product Disposal

Warning!

Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה !
סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

Hot Swap Fan Warning

Warning!

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

ファン・ホットスワップの警告

シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告
当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告
當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Los ventiladores podran dar vuelta cuando usted quite ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

אזהרה !
כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

من الممكن أن المراوح لا تزال تدورعند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي
وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

새시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조림품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

Power Cable and AC Adapter

Warning!

When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

電源コードとACアダプター

製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。

警告

安装此产品时,请使用本身提供的或指定的连接线,电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告

安裝此產品時,請使用本身提供的或指定的連接線,電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

Warnung

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

חשמליים ומתאמי AC

אזהרה !

כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרקמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل،والكابلات الكهربائية ومحولات التيار المتردد
التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق.
تم توفيرها لك مع المنتج
الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL معتمدة من قبل
لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro
(التي تحمل علامة UL/CSA)

경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

Notes

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the server to better cool and protect the system.

5-1 Handling the Motherboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent ESD.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid electro static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Motherboard Installation/Removal

The X10SLE-F motherboards have been preinstalled into carriers to simplify installing and removing the nodes from the SC939H-R1K63BP chassis. The motherboards should remain in these carriers at all times. If a failed node needs to be returned for repair or replacement, the motherboard is to be shipped assembled in its carrier and not by itself. See Chapter 6 for instructions on installing and removing the motherboard nodes from the chassis.

5-3 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard. These include the data cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables. The following data cables (with their serverboard connector locations noted) should be connected.
See the serverboard layout diagram in this chapter for connector locations.

- SATA cables (3.5" drives: I-SATA0 ~ I-SATA1, 2.5" drives: I-SATA0 ~ I-SATA3)

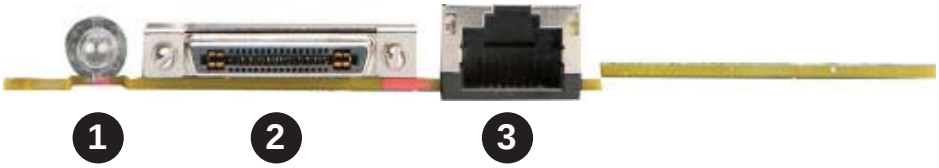
Connecting Power Cables

The X9DRD-LF has a proprietary power supply connector designated "JPWR2" for connection to the power supply. Connect the appropriate connector from the power supply to JPWR2 to supply power to the serverboard.

5-4 I/O Ports

The I/O ports are located at the back of the motherbord node. See Figure 5-1 below for the colors and locations of the various I/O ports. See Section 5-10 for port definitions.

Figure 5-1. I/O Ports



I/O Ports	
1	UID Button/LED
2	USBs (x2)/Video (Monitor)/COM (UART)
3	Dedicated IPMI LAN Port

5-5 Processor and Heatsink Installation

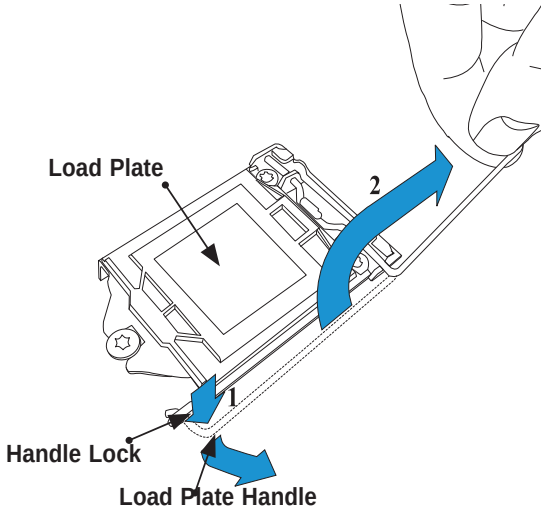
Warning: Avoid placing direct pressure to the top of the processor.

Notes:

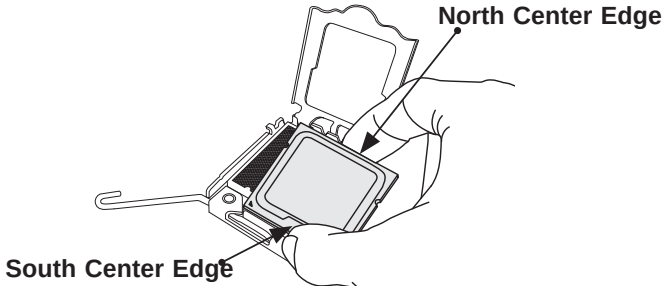
- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the motherboard into the chassis before you install the CPU heatsinks.
- When receiving a motherboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

Installing an LGA1150 Processor

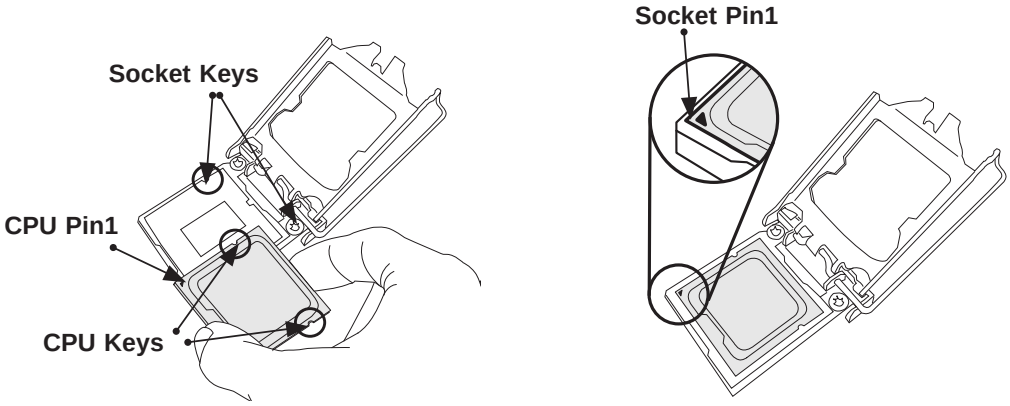
1. Gently press down the load plate handle and push it outward (to the right side) to unlock it.
2. Once the load plate handle is unlocked, gently lift the handle to open the load plate.



3. Once the load plate is open, use your thumb and your index finger to hold the CPU at the north center edge and the south center edge of the CPU.

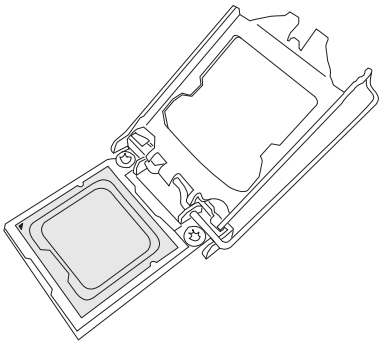


4. Align the CPU keys, which are the semicircular cutouts on the sides of the CPU (shown below), against the socket keys, the semicircular notches on the sides of the CPU socket. Align CPU pin 1, the triangle at the bottom left of the CPU, against pin 1 of the socket, the triangle marker at the bottom left of the CPU socket.

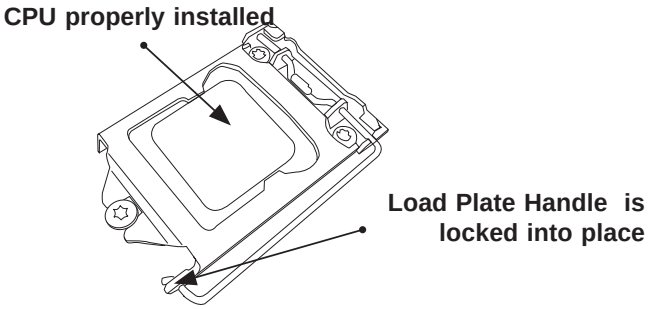


5. Once they are aligned, carefully lower the CPU straight down into the socket. (To avoid damaging the CPU or the socket, do not drop the CPU on the socket. Do not rub the CPU against the surface or against any pins of the socket.)

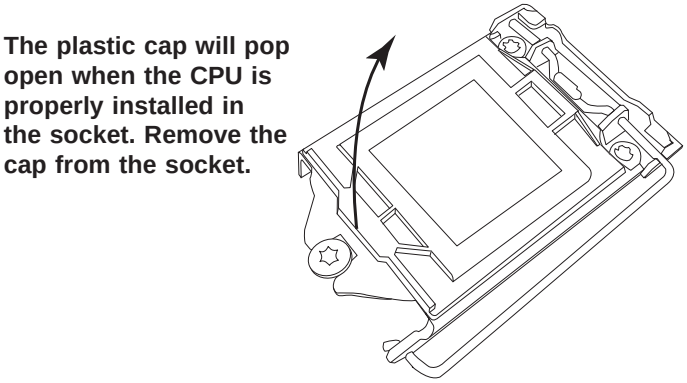
6. With the CPU seated inside the socket, inspect the four corners of the CPU to ensure that it is properly installed.



7. Once the CPU is properly installed, use your thumb to gently push the load plat handle down to the handle lock and lock it.



8. When the CPU is securely locked into the CPU socket, the plastic cap will be automatically loosened from the load plate. Use your thumb and index finger to remove the plastic cap from the socket.



Warning: You can install the CPU inside the socket only in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it, as that may damage your CPU. Instead, open the load plate again and check whether the CPU is properly aligned and securely seated inside the socket.

Installing a Heatsink

1. With the node removed, remove the air shroud.

2. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

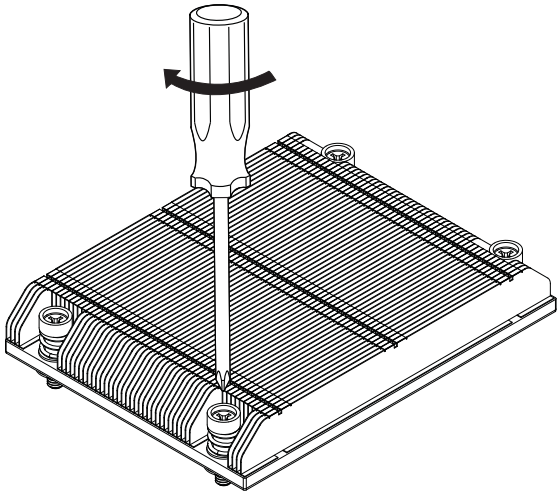
3. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the motherboard and the heatsink bracket underneath.

4. Screw in two diagonal facing screws until just snug. (To avoid possible damage to the CPU and heatsink, do not over-tighten the screws.)

5. Finish the installation by fully tightening all four screws.

6. Reverse the order of this procedure to remove a heatsink.

Figure 5-2. Installing a Heatsink



5-6 Installing Memory

Caution: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage to the DIMMs or their sockets

How to Install Memory

1. Insert the desired number of DIMMs into the memory slots in the following order: DIMMA2, then DIMMB2, DIMMA1, DIMMB1. Pay attention to the notch along the bottom of the module to prevent incorrect installation.

2. Insert each DIMM module vertically push down until it and snaps into place. Repeat to install more memory, if needed. See instructions on the next page.

Memory Support

Each X10SLE-F supports up to 32GB of Unbuffered (UDIMM) ECC DDR3-1600/1333/1066 memory in four DIMM slots. Only VLP (Very Low Profile) DIMMs are supported. Please refer to the product page on our web site for possible updates to memory support.

Figure 5-2. DIMM Installation

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.

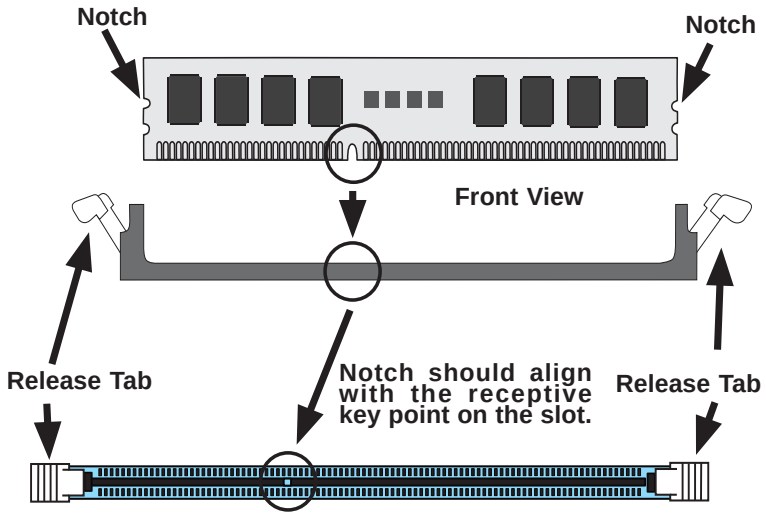
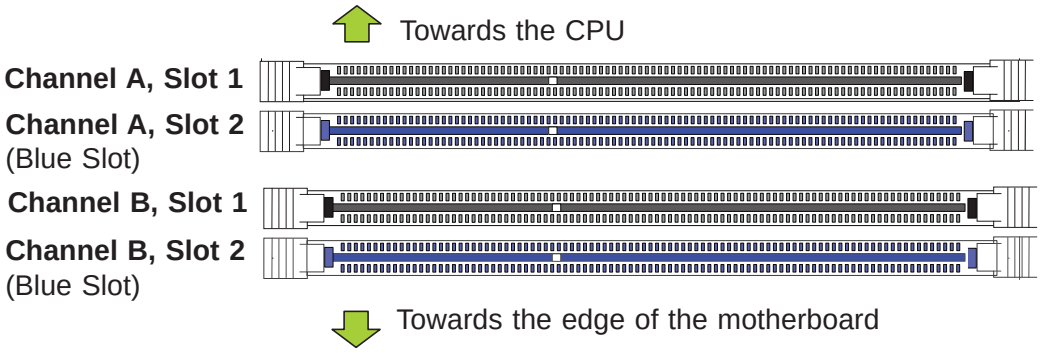


Figure 5-3. Populating DIMM Slots



Memory Population Guidelines

1. When installing memory modules, the DIMM slots should be populated in the following order: DIMMA2, DIMMB2, DIMMA1 and DIMMB1

2. Always use DDR3 DIMM modules of the same size, type and speed.

3. The motherboard will support one or three DIMM modules installed. However, for best memory performance, install DIMM modules in pairs.

Recommended Population (Balanced)				
DIMMA2	**DIMMB2**	**DIMMA1**	**DIMMB1**	**Total System Memory**
2GB DIMM	2GB DIMM			4GB
2GB DIMM	2GB DIMM	2GB DIMM	2GB DIMM	8GB
4GB DIMM	4GB DIMM			8GB
4GB DIMM	4GB DIMM	4GB DIMM	4GB DIMM	16GB
8GB DIMM	8GB DIMM			16GB
8GB DIMM	8GB DIMM	8GB DIMM	8GB DIMM	32GB

5-7 MicroLP Expansion Module

Each of the 12 nodes in the 5038ML-H12TRF has one MicroLP slot, which can support a single MicroLP expansion module. Follow the instructions below to install this module.

Installing a MicroLP Expansion Module

1. Power-down the node using that node's individual power button and remove it from the system as described in Chapter 6.

2. Open the PCI slot clip and remove the PCI slot shield.

3. Open the PCI slot clip in the rear of the motherboard node.

4. Remove the PCI slot shield.

5. The MicroLP module consists of a MicroLP card, a riser card and a mounting bracket. Simply insert the module into the MicroLP expansion slot.

6. Slide the expansion cards bracket into the PCI card slot and fit it with the opening in the rear of the node.

7. Close the PCI card slot clip to secure the expansion card.

Note: The PCI slot shields protect the motherboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each unused slot.

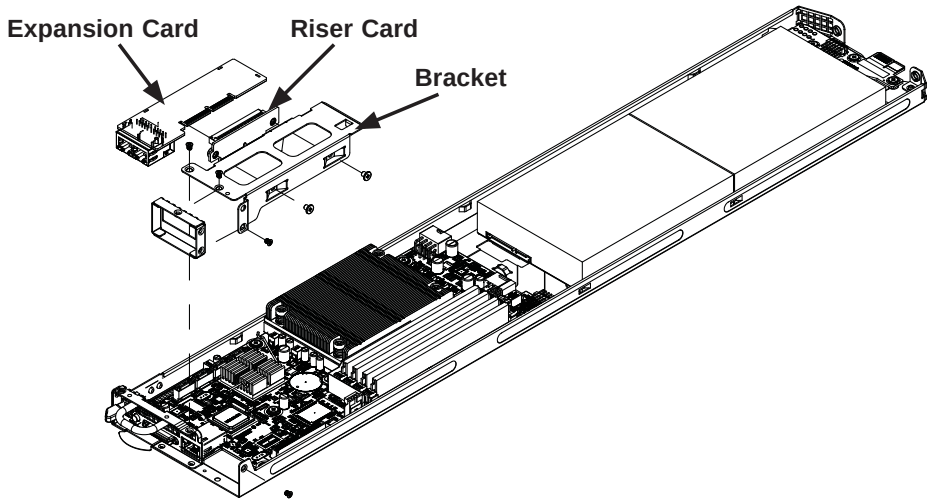


Figure 5-4. Installing the MicroLP Expansion Module

Notes: The node and motherboard shown above are examples. Your actual node and motherboard may vary from those illustrated.

The figure above shows an exploded view of the module. The expansion card, riser card and mounting bracket come pre-assembled.

Currently there are three supported MicroLP expansion cards for the 5038ML-H12TRF system, as described below.

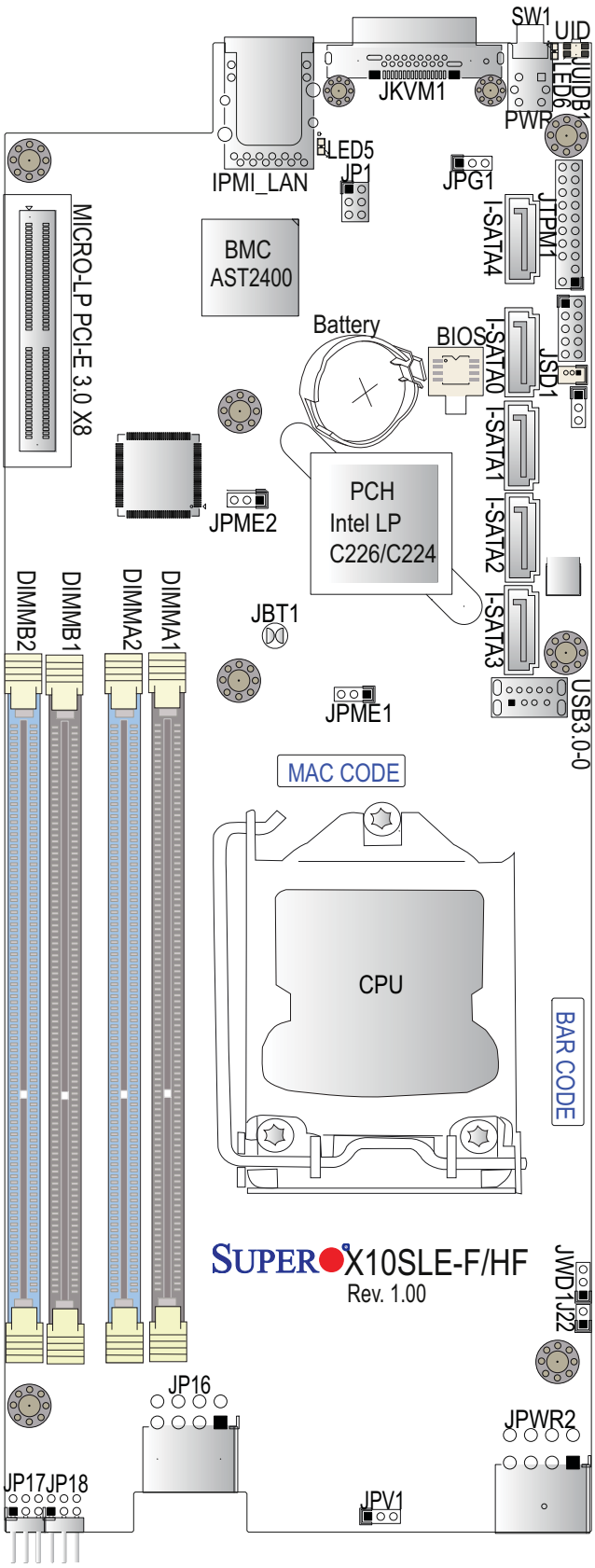
AOM-CGP-i2M: x2 LAN ports (standard)

AOM-CIBF-M1M: QSFP + x2 USB ports (optional)

AOM-CTG-i1SM: SFP+ x2 USB ports (optional)

5-8 Motherboard Details

Figure 5-5. X10SLE-F Layout



X10SLE-F Quick Reference		
Jumper	**Description**	**Default Setting**
JBT1	CMOS Clear	(See Section 5-10)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPME1	ME Recovery	Pins 1-2 (Normal)
JPME2	Manufacture Mode Select	Pins 1-2 (Normal)
JWD1	Watch Dog	Pins 1-2 (NMI)

Connector	**Description**
Battery	Onboard Battery
IPMI_LAN	Dedicated IPMI LAN
JKVM1	USB (x2) / VGA (Monitor) / COM (UART) Connector for Remote Console Redirection or Remote Network Interface
JP16	Power Output for Hard Disk Drive (12V and 5V)
JP17	Motherboard Interface to PDB
JP18	Motherboard Interface to PDB
JPWR2	SMC Proprietary Power Connector
JSD1	SATA DOM (Device On Module) Power Connector
JTPM1	Trusted Platform Module/Port 80 Connector
I-SATA0 - I-SATA4	Serial ATA Ports (I-SATA0-3: SATA 3.0, I-SATA4: SATA 2.0)
Micro-LP PCI-E Slot	SMC Proprietary Micro Low-Profile (LP) PCI-Express 3.0 x8 Slot
SW1	Power Switch/LED Indicator
UID	Unit Identifier (UID) Button (JUIDB)
USB0	Front Accessible USB 3.0 Port 0

LED	**Description**	**State/Status**
LED5	Power/Fan Fail/Overheat LED	Red: Power Fail, Fan Fail or Overheating
LED6	UID LED	Blue: Unit Identified

5-9 Connector Definitions

Unit Identifier Switch/UID LED Indicators

A Unit Identifier (UID) button and a LED indicator are located on the motherboard. The UID button is located at JUIDB1, and LED is located at LED6 on the backplane. When you press the UID button, the UID LED indicator will turn on. Press the UID button again to turn off the LED indicator. The UID indicator provides easy identification of a system unit that may be in need of service.

Note: UID can also be triggered via IPMI on the motherboard. For more information on IPMI, please refer to the IPMI User's Guide posted on our website @ http://www.supermicro.com.

UID Switch

Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Button In

UID LED Status

Color/State	Status
Blue: On	Unit Identified

Power Switch/LED

A power switch/LED indicator is located next to the UID button/LED on the backplane of the motherboard. Use this switch to power on or power off the system.

IPMI_LAN Port

An dedicated IPMI Ethernet port is located on the I/O backpanel to provide network connection via IPMI interface. This port accepts a RJ45 type cable.

Note: Please refer to the LED iIndicator Section for LAN LED information.

LAN Port Pin Definition

Pin#	Definition	Pin#	Definition
1	TD0+	11	TD3-
2	TD0-	12	NC
3	NC	13	Ground
4	TD1+	14	Act LED (Yellow)
5	TD1-	15	Link 1000 LED (Amber)
6	NC	16	Link 100 LED (Green)
7	TD2+	17	Ground
8	TD2-	18	Ground
9	NC	19	Ground
10	TD3+	20	Ground

(NC= No Connection)

SMC-Proprietary Power

This motherboard supports SMC-Proprietary power supply. Be sure to use the power supply recommended by Supermicro and connect it to JPWR2 to provide power to your system.

Power Output for HDD

An HDD power out connector is located at JP16. Connect a power cable to JP16 to provide 12V or 5 V power to the devices installed in hard drive disks.

Motherboard Interface to PDB

Connectors JP17/JP18 provide motherboard interface support to PDB. Connect appropriate cables to support interface between the motherboard and a PDB.

DOM PWR Connector (JSD1)

The Disk-On-Module (DOM) power connector, located at JSD1, provides 5V (Gen1/Gen) power to a solid state DOM storage device connected to one of the SATA ports. See the table on the right for pin definitions.

DOM PWR Pin Definitions

Pin#	Definition
1	5V
2	Ground
3	Ground

Universal Serial Bus (USB)

A USB 3.0 port (USB 0) is located next to I-SATA3 to provide front chassis access using USB cables (not included). Two additional USB connections are supported by JKVM1 on the IO backplane. See the table on the right for pin definitions.

USB (3.0) Type A Pin Definitions

Pin#	Signals	Pin#	Signals
1	VBUS	8	StdA_SSTX-
2	D-	9	StdA_SSTX+
3	D+	10	Ground
4	Ground	11	Ground
5	StdA_SSRX-	12	Ground
6	StdA_SSRX+	13	Ground
7	GND_DRAIN		

USB (x2)/VGA/COM Connector

JKVM1 supports USB(x2)/VGA/COM (UART) connections on the I/O backplane to provide console redirection support or remote networking interface.

TPM Header/Port 80 Header

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

TPM/Port 80 Header Pin Definitions

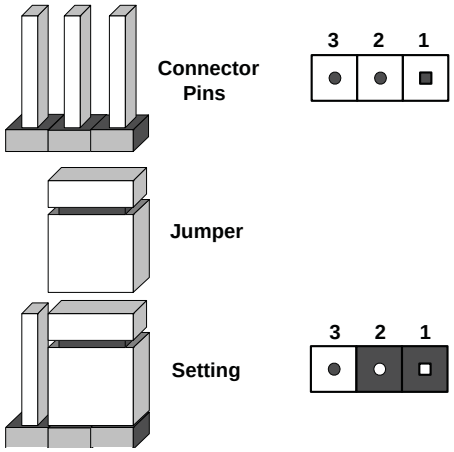
Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	RSV0	14	RSV1
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	RSV2	20	RSV3

5-10 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

Note: On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" means the jumper is either on only one pin or completely removed.



CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS,

1. First power down the system and unplug the power cord(s). It is also recommended that you remove the onboard battery from the motherboard.

2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.

3. Remove the screwdriver (or shorting device).

4. Reconnect the power cord(s) and onboard battery and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS*.

VGA Enable/Disable (JPG1)

JPG1 allows the user to enable the onboard VGA connector (through the KVM). Close pins 1~2 to enable the VGA. The default setting is Enabled.

VGA Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog RST/NMI Selection (JWD1)

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1~2 to reset the system if an application hangs. Close pins 2~3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

ME Recovery

Set Jumper JPME1 to select ME Firmware Recovery Mode, which will limit system resource for essential function use only without putting restrictions on power use. In the single operation mode, online upgrade will be available via Recovery mode. See the table on the right for pin definitions.

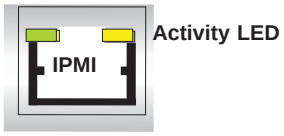
ME Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	ME Recovery

Manufacturer Mode Select

Close this jumper (JPME2) to bypass SPI flash security and force the system to use the Manufacturer Mode, which allows the user to flash the system firmware from a host server to modify system settings. See the table on the right for jumper settings.

ME Mode Select Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	Manufacture Mode

5-11 Onboard Indicators



IPMI Dedicated LAN Port

A dedicated IPMI LAN port is located on the I/O backpanel. The yellow LED on the right indicates activity, while the LED on the left indicates the speed of the connection. See the table at right for more information.

IPMI LAN Link Speed LED	
Linl LED Color/State	Definition
Green	100 Mbps
Amber	1000 Mbps

PWR Fail/Fan Fail/OH LED

A Power Fail/Fan Fail/Overheat LED (LED5) is located on the reverse side of the motherboard (right under LED6). See the table at right for more information.

PWR Fail/Fan Fail/OH LED Status	
Color/State	Definition
Red: On	PWR Fail, Fan Fail or System Overheating

5-12 SATA Ports

SATA Ports

Five Serial ATA (SATA) (I-SATA 0-4) ports are provided on the motherboard. I-SATA0-3 supports SATA 3.0 and I-SATA4 supports SATA 2.0. These Serial Link connections provide faster data transmission than legacy Parallel ATA. See the table on the right for pin definitions.

SATA Port Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground

5-13 Installing Software

The Supermicro ftp site contains drivers and utilities for your system at ftp://ftp.supermicro.com. Some of these must be installed, such as the chipset driver.

After accessing the ftp site, go into the CDR_Images directory and locate the ISO file for your motherboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro Website at http://www.supermicro.com/products/. Find the product page for your motherboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-6 should appear.

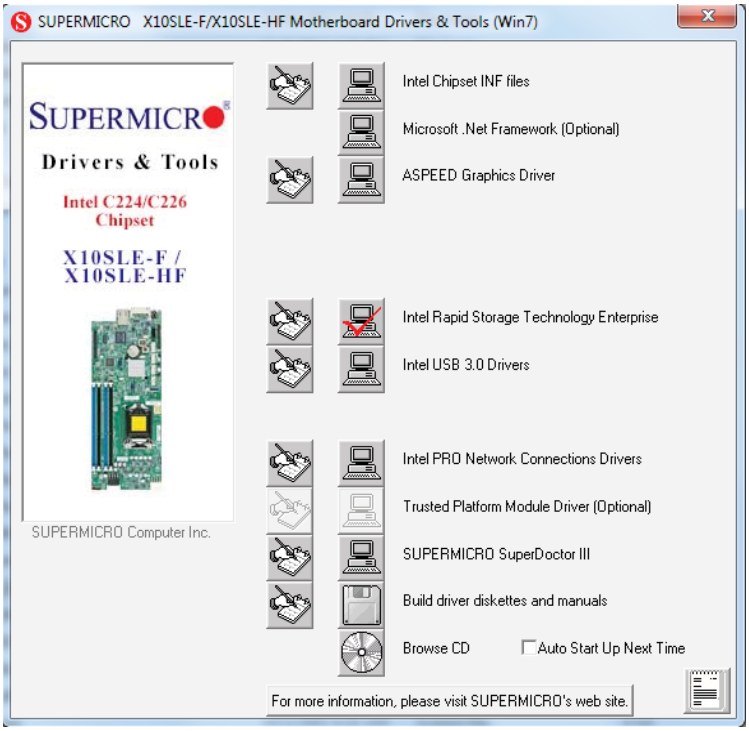

SUPERMICRO X10SLE-F/X10SLE-HF Motherboard Drivers & Tools (Win7)
SUPERMICRO
Drivers & Tools
Intel C224/C226 Chipset
X10SLE-F / X10SLE-HF
SUPERMICRO Computer Inc.
Intel Chipset INF files
Microsoft .Net Framework (Optional)
ASPEED Graphics Driver
Intel Rapid Storage Technology Enterprise
Intel USB 3.0 Drivers
Intel PRO Network Connections Drivers
Trusted Platform Module Driver (Optional)
SUPERMICRO SuperDoctor III
Build driver diskettes and manuals
Browse CD
Auto Start Up Next Time
For more information, please visit SUPERMICRO's web site.

Figure 5-6. Driver/Tool Installation Display Screen

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

SuperDoctor III

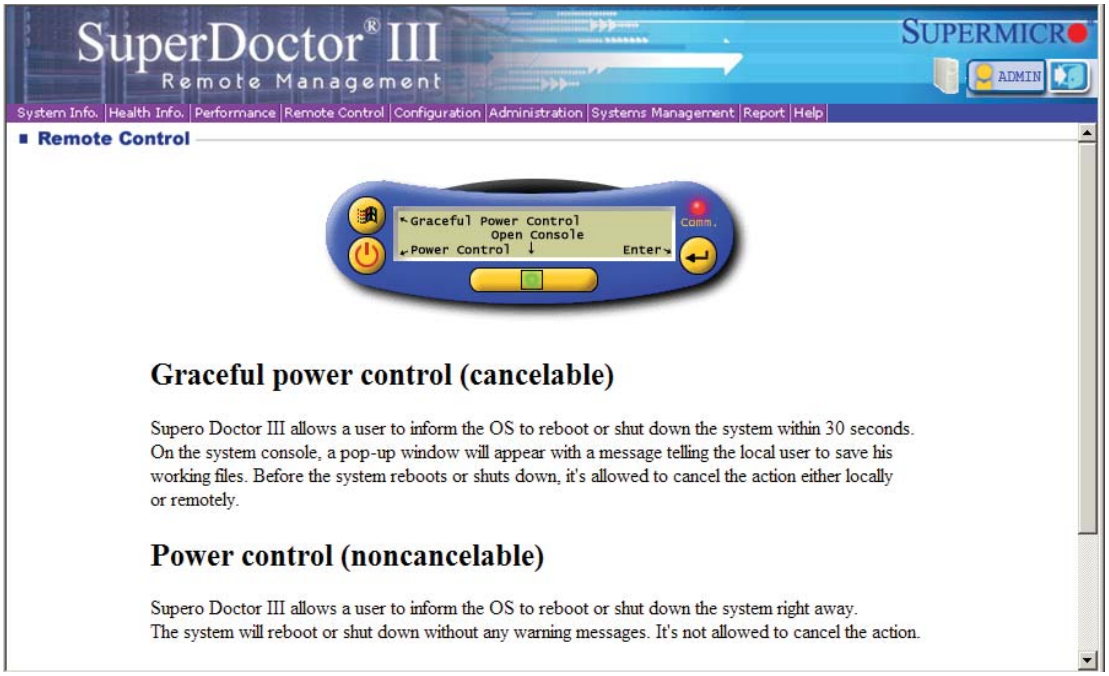
The SuperDoctor® III program is a web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the figures below for examples of the SuperDoctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within SuperDoctor III, as the SuperDoctor III settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

Figure 5-7. SuperDoctor III Interface Display Screen (Health Information)

Figure 5-8. SuperDoctor III Interface Display Screen (Remote Control)

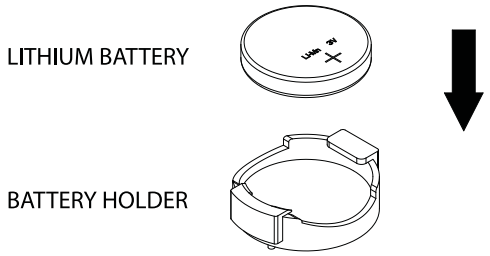

SuperDoctor® III
Remote Management
SUPERMICRO
ADMIN
System Info.
Health Info.
Performance
Remote Control
Configuration
Administration
Systems Management
Report
Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control (cancelable)
Supero Doctor III allows a user to inform the OS to reboot or shut down the system within 30 seconds. On the system console, a pop-up window will appear with a message telling the local user to save his working files. Before the system reboots or shuts down, it's allowed to cancel the action either locally or remotely.
Power control (noncancelable)
Supero Doctor III allows a user to inform the OS to reboot or shut down the system right away. The system will reboot or shut down without any warning messages. It's not allowed to cancel the action.

Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm. For Linux, we recommend that you use the SuperDoctor II application instead.

5-14 Onboard Battery

Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Figure 5-9. Installing the Onboard Battery



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC939H-R1K63BP chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- The person unpacking the system should be static protected.

6-2 Removing the Chassis Cover

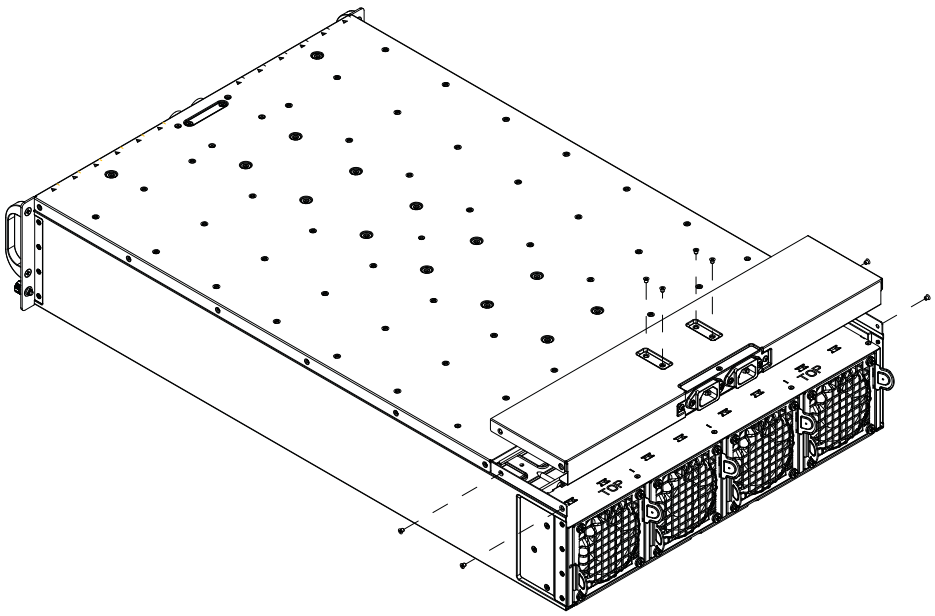


Figure 6-1. Removing the Chassis Cover

Removing the Chassis Cover

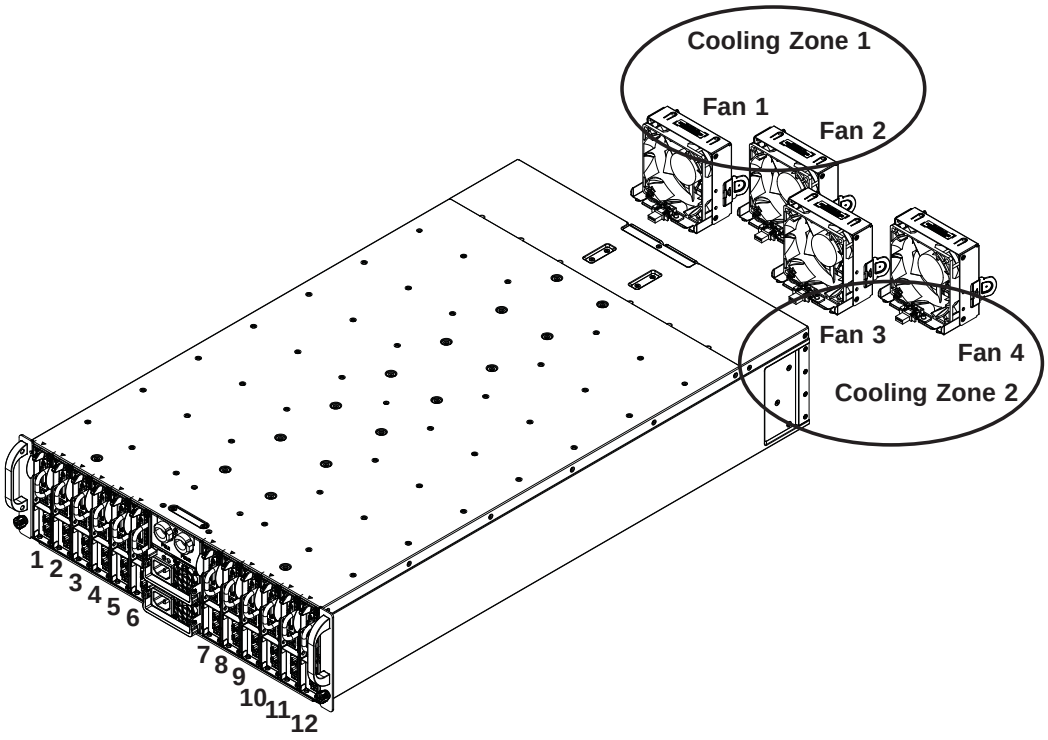
1. Disconnect the chassis from any power source.
2. Remove the three screws which secure the top cover to the chassis as illustrated above.
3. Lift the top cover up and off the chassis.
4. Peel off the protective film covering the top cover and the top of the chassis
5. Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.

Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

6-3 Corresponding Nodes and Fans

The 5038ML-H12TRF contains 12 individual motherboards contained in separate nodes. Three nodes each share a common fan (see figure below).

Figure 6-2. Corresponding Nodes and Fans



Corresponding Nodes and Fans		
Cooling Zone	**Node**	**Fans**
Zone 1	Nodes 1 through 6	Fans 1 & 2
Zone 2	Nodes 7 through 12	Fans 3 & 4

6-4 Removing and Installing Motherboard Nodes

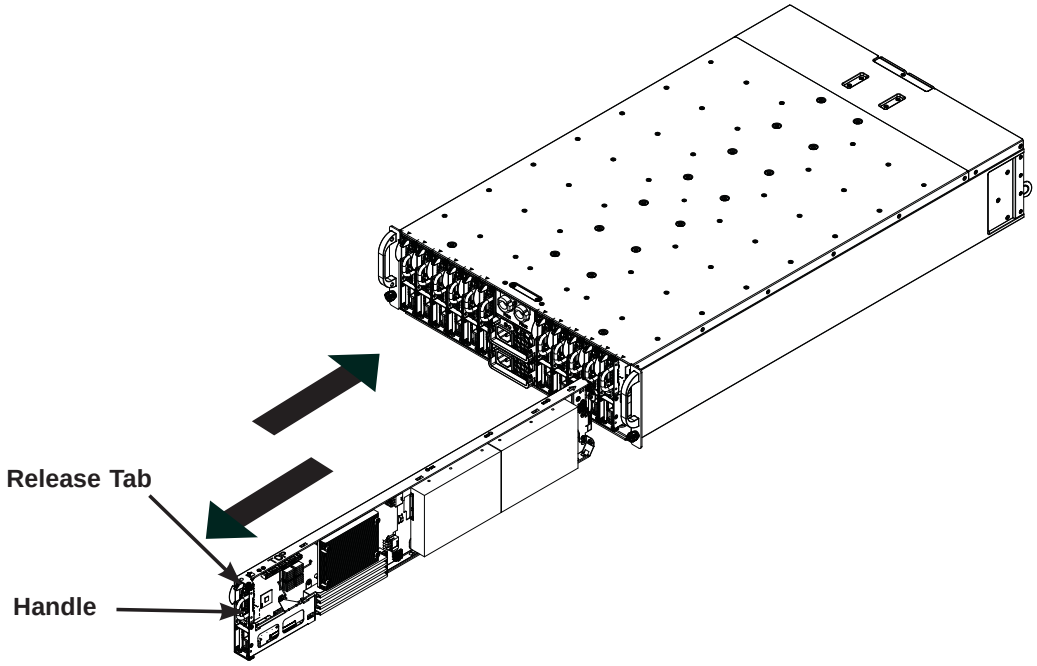


Figure 6-3. Removing/Installing a Node

The system comes features twelve removable nodes. Each node contains an individual motherboard and hard drives mounted on a sled, which allows it to easily be installed and removed from the chassis.

Removing Nodes from the System

1. Power-down the individual node by pressing that node's power button.
2. Press and hold down the release tab on the back of the node.
3. Use the node's handle to pull the node from the system.

Warning: Except for short periods of time while swapping nodes, do not operate the server with the node bays empty. In the unlikely event of a node failure, remove the failed node and replace it with the dummy node that was included with the system.

6-5 Installing/Removing Hard Drives

The hard drives are installed directly to the sled, which must first be removed from the system. For this reason, hard drives are not hot-swappable. Either two 3.5" or four 2.5" hard drives can be installed in each sled (node). An optional kit is required to install 2.5" drives (MCP-220-93903-0N bracket).

Installing/Removing Hard Drives from the Sled

1. Remove the node to have HDDs installed or removed by following the procedure in the previous section.
2. Place the sled on a flat, non-conductive surface.
3. Insert the hard drive with the printed circuit board side facing downward so that the mounting holes in the drive align with those in the bottom of the sled.
4. Secure the hard drive to the sled with the screws included with the drive.
5. When finished installing or removing drives, push the node/sled back into the bay it was removed from.
6. Use the node's power button to power it back on.

Figure 6-4. Installing/Removing 3.5" Hard Drives

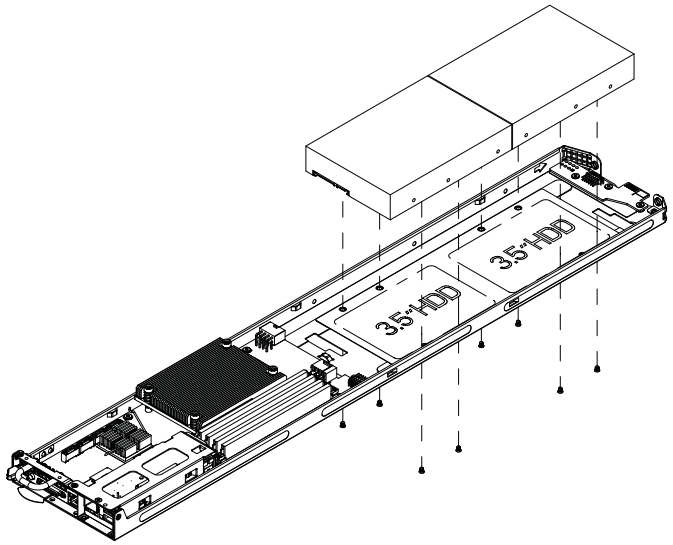
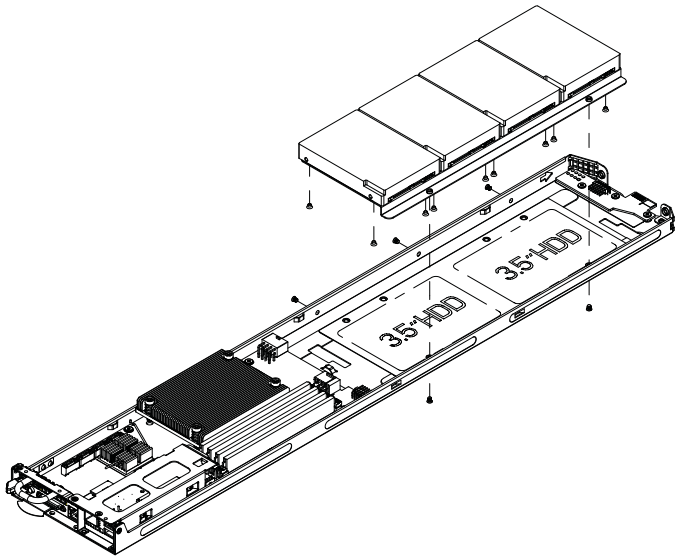


Figure 6-5. Installing/Removing 2.5" Hard Drives (Optional)



Note: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/storage.cfm

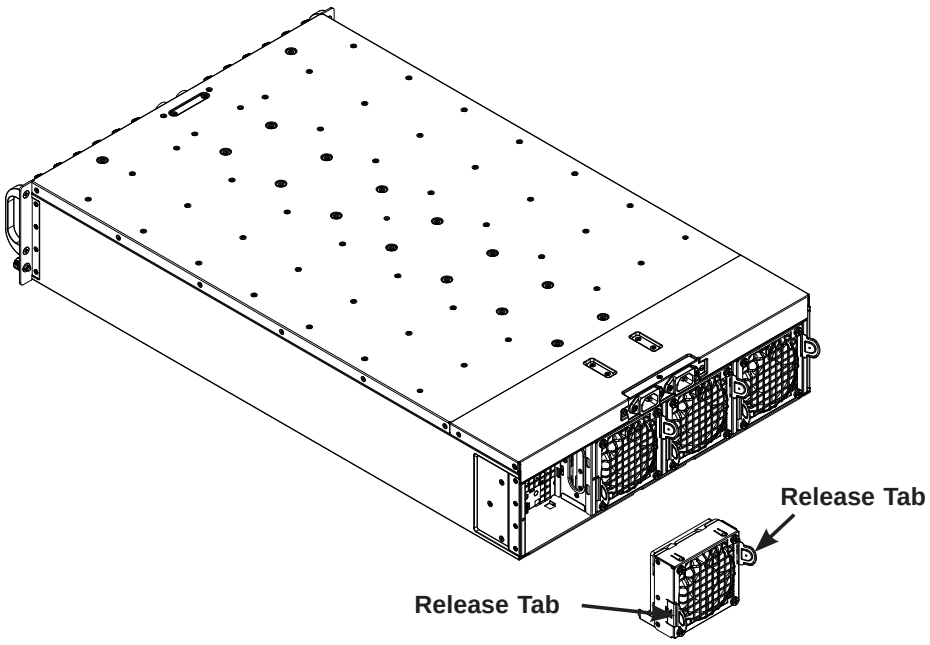
6-6 System Fans

Four 9-cm fans circulate air through the chassis to lower the internal temperature. These fans are designed to be easily changed, with no tools required and no need to remove any other parts inside the chassis. In the event of a fan failure, follow the instructions below to replace it.

Removing a Fan

1. Visually inspect the fans to see which one has failed.
2. Push both release tabs on the failed fan inward.
3. Remove the the fan from the chassis. The wiring will disconnect automatically.
4. Remove the screws securing the fan ti its housing and set them aside for later use.
5. Insert a new fan into the housing and secure with the screws previously removed.
6. Confirm that the fan is working with the system powered on.

Figure 6-6. Removing a Fan



6-7 Power Supply

The system includes a redundant 1620 watt, high-efficiency power supply. The two power supply modules are auto-switching capable, which enables them to automatically sense and operate at a 100V to 240V input voltage. An amber light is illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is on.

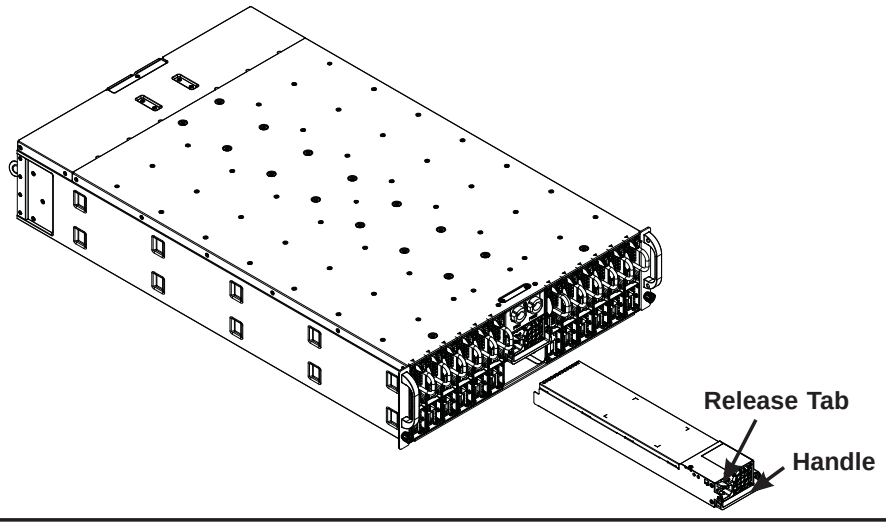
Power Supply Replacement

In the event that one of the power supplies needs to be replaced, one power supply can be removed without powering-down the system. Replacement power supply units may be ordered directly from Supermicro.

Changing the Power Supply

1. With the system running, unplug the AC power cord from the failed power supply module.
2. Press the release tab at the top of the power module
3. Push and hold the release tab on the back of the power supply.
4. Grasp the handle and pull the power supply out of its bay.
5. Push the replacement power supply module into the empty bay until it clicks into the locked position.
6. Plug the AC power cord back into the power supply module.

Figure 6-6. Removing a Power Module



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X10SLE-F/X10SLE-HF. The ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Note: For AMI BIOS Recovery, please refer to the UEFI BIOS Recovery Instructions in Appendix C.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F4>, <Enter>, <ESC>, arrow keys, etc.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

How to Start the Setup Utility

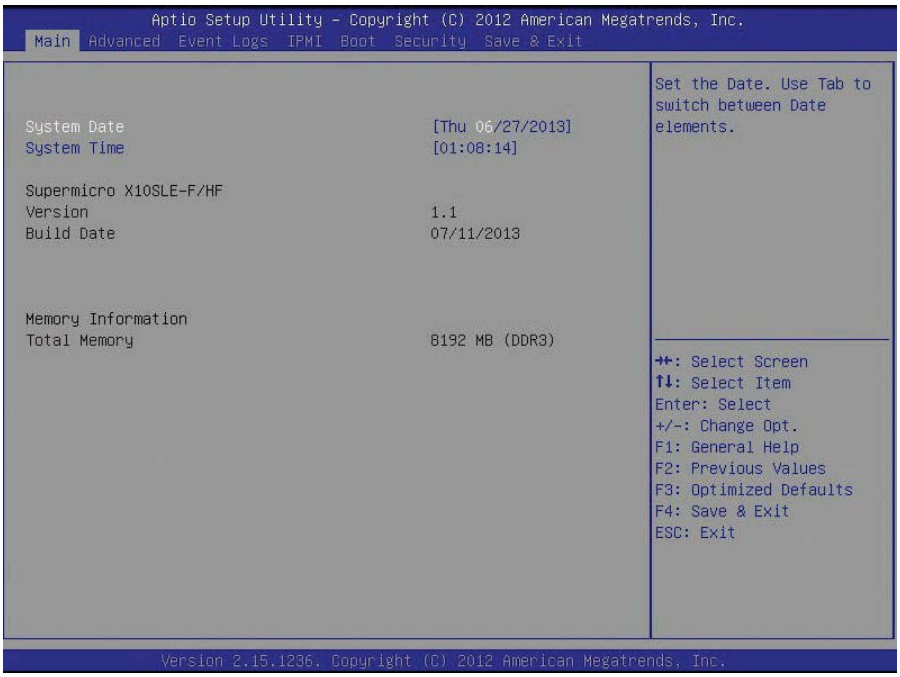
Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

7-2 Main Setup

When you first enter the AMI BIOS Setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.

The following Main menu items will display:


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Save & Exit
System Date [Thu 06/27/2013]
System Time [01:08:14]
Supermicro X10SLE-F/HF
Version 1.1
Build Date 07/11/2013
Memory Information
Total Memory 8192 MB (DDR3)
Set the Date. Use Tab to switch between Date elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

System Date/System Time

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format.

> **Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

The following BIOS items will also be displayed:

Supermicro X10SLE-F/HF

Version

Build Date

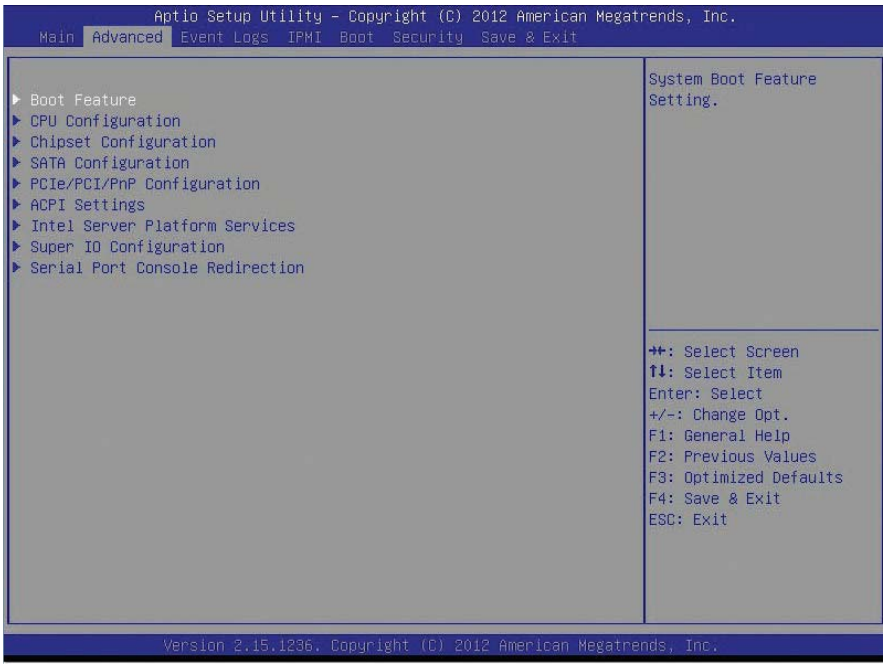
Memory Information

Total Memory

This displays the total size of memory available in the system.

7-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and press <Enter> to access the submenu items:



Warning: Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency, or an incorrect DRAM timing setting may make the system unstable. When this occurs, revert to the setting to its manufacture default setting.

▶Boot Feature

Quiet Boot

This feature selects the screen display between POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

This feature sets the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM display setting. Select Force BIOS to use the Option ROM display mode set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

This feature selects the Power-on state for the Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

Select Enabled to force the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

Re-try Boot

Select Enabled to allow the BIOS to automatically reboot the system from a specified boot device after the initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

▶Power Configuration

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4_Seconds_Override to power off the system after the user presses and holds the power button for 4 seconds or longer. Select Instant Off to instantly power off the system as soon as the user presses the power button. The options are 4 Seconds Override and **Instant Off.**

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last power state before a power loss. The options are Power-On, Stay-Off and **Last State**.

▶CPU Configuration

The following CPU information will be displayed:

- Type of CPU

- CPU Signature
- CPU Stepping
- Microcode Patch
- FSB Speed
- Maximum CPU Speed
- Minimum CPU Speed
- CPU Speed
- Processor Cores
- Intel HT(Hyper-Threading) Technology
- Intel VT-x (Virtualization) Technology
- Intel SMX (Safer Mode Extensions) Technology
- 64-bit
- EIST (Enhanceed Intel SpeedstepTechnology) Technology
- CPU C3 State
- CPU C6 State
- CPU C7 State
- L1 Data Cache
- L1 Code Cache
- L2 Cache
- L3 Cache

Hyper-threading

Select Enabled to support Intel Hyper-threading Technology to enhance CPU performance. The options are **Enabled** and Disabled.

Active Processor Cores

This feature determines how many CPU cores will be activated for each CPU. When all is selected, all cores in the CPU will be activated. (Please refer to Intel's web site for more information.) The options are **All,** 1, 2, and 3.

Limit CPUID Maximum

Select Enabled to set the maximum CPU ID value and to boot the legacy operating systems that cannot support processors with extended CPUID functions. The options are Enabled and **Disabled** (for the Windows OS).

Execute-Disable Bit (Available if supported by the OS & the CPU)

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the Intel Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

Select Enabled for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disabled for the CPU to prefetch both cache lines for 64 bytes. The options are Disabled and **Enabled**.

> **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

CPU AES

Select Enable to enable Intel CPU Advanced Encryption Standard (AES) Instructions for CPU to enhance data integrity. The options are **Enabled** and Disabled.

Boot Performance Mode

Use this item to set the performance mode for the CPU upon bootup. Select Max Non-Turbo to achieve the maximal performance without invoking out-of-band or turbo mode for the CPU. The options are **Max Non-Turbo Performance** and Turbo Performance.

EIST

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. **Please refer to Intel's web site for detailed information.** The options are Disabled and **Enabled**.

Turbo Mode

This feature allows processor cores to run faster than the frequency recommended by the manufacturer. The options are Disabled and **Enabled.** If this feature is set to Enabled, the following items will display:

CPU Power Limit1 (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the power limit for CPU1. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

CPU Power Limit1 Time (Available when "Turbo Mode" is set to Enabled)

This item allows the user to determine how long CPU1 should operate at the power limit set by the user for the item above. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

CPU Power Limit2 Time (Available when "Turbo Mode" is set to Enabled)

This item allows the user to determine how long CPU2 should operate at the power limit set by the user for the item above. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

Platform Power Limit Lock (Available when "Turbo Mode" is set to Enabled)

Select Enabled to lock the value of Platform Power Limit in the MSR (Model-Specific Register). Once it is locked, you will need to reboot the system to unlock the MSR. The options are Disabled and **Enabled**.

CPU Power Limit3 (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the value of CPU Power Limit3 for your system. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

CPU Power Limit3 Time (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the length of time value for CPU Power Limit3 for your system. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

CPU Power Limit3 Duty Cycle (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the value of CPU Power Limit3 Duty Cycle for your system. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

DDR Power Limit1 (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the power limit for DDR1. Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

DDR Power Limit1 Time (Available when "Turbo Mode" is set to Enabled)

This item allows the user to determine how long DDR1 should operate at the power limit set by the item above. Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

DDR Power Limit2 (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the power limit for DDR2. Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

1-Core Ratio Limit (Available when "Turbo Mode" is set to Enabled)

This feature increases (multiplies) 1 clock speed in the CPU core in relation to the bus speed when one CPU core is active. Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

2-Core Ratio Limit (Available when "Turbo Mode" is set to Enabled)

This feature increases (multiplies) 2 clock speeds in the CPU core in relation to the bus speed when two CPU cores are active. Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

3-Core Ratio Limit (Available when "Turbo Mode" is set to Enabled)

This feature increases (multiplies) 3 clock speeds in the CPU core in relation to the bus speed when one CPU core is active. Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

4-Core Ratio Limit (Available when "Turbo Mode" is set to Enabled)

This feature increases (multiplies) 4 clock speeds in the CPU core in relation to the bus speed when two CPU cores are active. Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

Energy Performance

Use this feature to select an appropriate fan setting to achieve the maximum system performance (with maximum cooling) or to achieve maximum energy efficiency (with maximum power saving). The fan speeds are controlled by the firmware management via IPMI 2.0. The options are **Performance**, Balanced Performance, Balanced Energy, and Energy Efficient.

VR Current Value

Use this feature to set the limit on the current voltage regulator. Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

CPU C-States

C-States architecture, a processor power management platform developed by Intel, can further reduce power consumption from the basic C1 (Halt State) state that blocks clock cycles to the CPU. Select Enabled for CPU C-Sates support. The options are **Enabled** and Disabled. If this feature is set to Enabled, the following items will display:

Enhanced C1 State (Available when "CPU C-States" is set to Enabled)

Select Enabled to enable Enhanced C1 Power State to boost system performance. The options are **Enabled** and Disabled.

CPU C3 Report (Available when "CPU C-States" is set to Enabled)

Select Enabled to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are **Enabled** and Disabled.

CPU C6 Report (Available when "CPU C-States" is set to Enabled)

Select Enabled to allow the BIOS to report the CPU C6 State (ACPI C3) to the operating system. During the CPU C6 State, the power to all caches is turned off. The options are **Enabled** and Disabled.

C6 Latency (Available when "CPU C-States" is set to Enabled)

Select Short to set a short delay time(period) during which the BIOS reports CPU C6 State (ACPI C3) to the operating system. Select Long to set a long delay time(period) during which the BIOS reports CPU C6 State (ACPI C3) to the operating system. The options are **Short** and Long.

CPU C7 Report (Available when "CPU C-States" is set to Enabled

Select Enabled to allow the BIOS to report the CPU C7 State (ACPI C3) to the operating system. CPU C7 State is a processor-specific low C-State. The options are Disabled, CPU C7, and **CPU C7s**.

C7 Latency (Available when "CPU C-States" is set to Enabled)

Select Short to set a short delay time(period) during which the BIOS reports CPU C7 State (ACPI C3) to the operating system. Select Long to set a long delay time(period) during which the BIOS reports CPU C7 State (ACPI C3) to the operating system. The options are Short and **Long**.

C1 State Auto Demotion

When this item is enabled, the CPU will conditionally demote C3, C6 or C7 requests to C1 based on the information of un-cored auto-demote. The options are Disabled and **Enabled.**

C3 State Auto Demotion

When this item is enabled, the CPU will conditionally demote C6 or C7 requests to C3 based on the information of un-cored auto-demote. The options are Disabled and **Enabled.**

C-State Pre-Wake

Select Enabled to enable C State Pre-Wake State support. The options are **Enabled** and Disabled

Package C-State limit

Select Auto for the AMI BIOS to automatically set the limit on the register of the C-State package. The options are C0/C1, C2, C3, C6, C7, C7s, and **Auto**.

LakeTiny Feature

Select Enabled to enable LakeTing support. The options are **Disabled** and Enabled.

ACPI T State

Select Enabled for ACPI T state (processor throttling) feature support. The options are Disabled and **Enabled**.

▶Chipset Configuration

Warning: Setting the wrong values in the following sections may cause the system to malfunction.

▶System Agent (SA) Configuration

The following System Agent (SA) information will be displayed:

- System Agent Bridge Name
- VT-d Capability

VT-d

Select Enabled to enable Intel Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are **Enabled** and Disabled.

▶PCI-E Configuration

This item displays the information of the (graphics) device installed on a PCI-E slot.

Micro-LP Slot

Micro-LP Slot-Gen X

This feature allows the user to select the PCI-E setting for the device installed on the PCI-E slot specified. The options are **Auto**, Gen1 (Generation 1), Gen 2 and Gen 3.

Run-time C7 Allowed

Select Enabled for Run-time C7 support, which will allow the CPU to enter the deep sleep state while the system is in operation to reduce power consumption. (**Note**: Please be sure to restore the default settings and save appropriate endpoint settings for all components associated to this feature ***before*** you enable this feature.) The options are **Enabled** and Disabled.

Detect Non-Compliance Device

Select Enabled for the AMI BIOS to automatically detect a PCI-E device that is not compliant with the PCI-E standards. The options are Enabled and **Disabled**.

Program PCI-E ASPM After OpROM

PCI-E ASPM, the Active State Power Management for PCI-Express slots, is a power management protocol used to manage power consumption of serial-link devices installed on PCI-Exp slots during a prolonged off-peak time. If this item is set to Enabled, PCI-E ASMP will be programmed after OpROM. If this item is set to Disabled, the PCI-E ASPM will be programmed before OpROM. The options are **Enabled** and Disabled.

Micro-LP Slot-ASPM

Use this feature to set the ASPM (Active State Power Management) level for the device installed on the PCI-E slot specified above. The options are Disabled, **Auto**, ASPM L0s, ASPM L1, and, ASPM L0sL1.

DMI Link ASPM Control

This feature configures the ASPM (Active State Power Management) settings for the devices/components connected to the DMI Link on the System Agent side. The options are Disabled, L0s, L1, and **L0sL1**.

PCH Link ASPM Control

Select Enabled to support ASPM (Active State Power Management) for both North Bridge and South Bridge. The options are Disabled and **Enabled**.

▶Memory Configuration

This submenu displays the information on the memory modules installed on the motherboard.

- Memory RC Version
- Memory Frequency
- Total Memory
- Memory Voltage
- DIMMA1
- DIMMA2
- DIMMB1
- DIMMB2
- CAS Latency (tCL)
- Minimum Delay Time
  - CAS to RAS (tRODmin)
  - Row Precharge (tRPmin)
  - Active to Precharege (tRASmin)

Memory Frequency Limiter

This feature sets the limit of memory frequency for DIMM modules installed on the the motherboard. The options are **Auto,** 1067 (MHz), 1333 (MHz), and 1600 (MHz).

Max TOLUD (Top of Low Usable DRAM)

This feature sets the maximum TOLUD value, which specifies the "Top of Low Usable DRAM" memory space to be used by internal graphics devices or graphics controllers, if these devices are enabled. The options are **Dynamic**, 1 GB, 1.25 GB, 1.5 GB, 1.75 GB, 2 GB, 2.25 GB, 2.5 GB, 2.75 GB, 3 GB and 3.25 GB.

Memory Scrambler

Select Enabled to enable memory scrambler support for memory error correction. The settings are **Enabled** and Disabled.

▶PCH-IO Configuration

This item displays the information for PCH-IO Chip.

- Intel PCH Rev ID
- USB Configuration
- USB Devices

EHCI1

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 1 for USB 2.0 support. One EHCI controller must always be enabled. The settings are **Enabled** and Disabled.

EHCI2

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 2 for USB 2.0 support. One EHCI controller must always be enabled. The settings are **Enabled** and Disabled.

Legacy USB Support

Select Enabled to support legacy USB devices. Select Auto to disable legacy support if legacy USB devices are not present. Select Disable to have USB devices available only for EFI applications. The options are **Enabled,** Disabled and Auto.

Port 60/64 Emulation

Select Enabled to support I/O Port 60h/64h Emulation which will allow a legacy USB keyboard to be fully supported by an operating system that does not recognize a USB device. The options are Disabled and **Enabled**.

XHCI Hand-Off

This item is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership

change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

EHCI Hand-Off

This item is for Operating Systems that do not support Enhanced Host Controller Interface (EHCI) hand-off. When this item is enabled, EHCI ownership change will be claimed by the EHCI driver. The settings are Enabled and **Disabled**.

XHCI Mode

This feature handles the operation mode for the XHCI (Extensible Host Controller Interface) controller. The settings are **Smart Auto**, Auto, Enabled, Disabled and Manual.

▶SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA Devices and displays the following items:

SATA Controllers

This item Enables or Disables the built-in SATA controllers on the motherboard. The options are **Enabled** and Disabled.

SATA Mode Selection

This item selects the mode for the installed SATA drives. The options are IDE, **AHCI** and RAID.

SATA RAID Option ROM/UEFI Driver (Available if the item above - SATA Mode Select is set to AHCI or RAID)

Select Enabled to use the SATA RAID Option ROM/UEFI driver for system boot. The options are **Enabled** and Disabled.

If the item -SATA Mode Select is set to AHCI, the following items are displayed:

Serial ATA Port 0~ Port 4

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

Port 0 ~ Port 4 Hot Plug

This feature designates the port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA disk drive without shutting down the system. The options are **Enabled** and Disabled.

Port 0 ~ Port 1 SATA Device Type

This feature configures the selected SATA port to support either a solid state drive or hard disk drive. The options are **Hard Disk Drive** and Solid Sate Drive.

Port 0 ~ Port 4 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization sequence to the device. The options are Enabled and **Disabled**.

If the item - SATA Mode Select is set to IDE, the following items are displayed:

Serial ATA Port 0~ Port 4

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

If the item - SATA Mode Select is set to RAID, the following items are displayed:

Serial ATA Port 0~ Port 4

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

Port 0 ~ Port 4 Hot Plug

This feature designates this port for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA drive without shutting down the system. The options are **Enabled** and Disabled.

Port 0 ~ Port 1 SATA Device Type

This feature configures the selected SATA port to support either a solid state drive or hard disk drive. Set this item to Enabled to enable hot-plugging. The options are **Hard Disk Drive** and Solid Sate Drive.

Port 0 ~ Port 4 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization sequence to the device. The options are Enabled and **Disabled**.

▶PCIe/PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

Above 4G Decoding

Select Enabled for 64-bit devices to be decoded above the 4GB address space if 64bit PCI decoding is supported by the system. The options are **Disabled** and Enabled.

VGA Palette Snoop

Select Enabled to support VGA palette register snooping which will allow a PCI card that does not contain its own VGA color palette to examine the video card palette and mimic it for proper color display. The options are **Disabled** and Enabled.

PERR# Generation

Select Enabled to allow a PCI device to generate a PERR number for a PCI Bus Signal Error Event. The options are **Disabled** and Enabled.

SERR# Generation

Select Enabled to allow a PCI device to generate an SERR number for a PCI Bus Signal Error Event. The options are **Disabled** and Enabled.

MICRO-LP PCI-E 3.0x8

Select Enabled to enable Option ROM support which will allow the user to boot the system using a device installed on the slot specified. The options are Disabled, **Legacy** and EFI.

Launch Storage OPROM Policy

This feature controls how the system executes UEFI (Unified Extensible Firmware Interface), and legacy storage OPROM. Select Legacy Only to boot the system using a legacy device installed in a PCI slot. The options are UEFI Only and **Legacy Only**.

Other PCI Device ROM Priority

This feature selects a PCI device OPROM to launch for system boot if this device is not a network, mass storage, or video device. The options are UEFI Only and **Legacy Only**.

Network Stack

Select Enabled to use PXE (Preboot Execution Environment) devices for network stack support. Select Disabled to use UEFI (Unified Extensible Firmware Interface) devices for network stack support. The options are Enabled and **Disabled**.

▶ACPI Settings

High Precision Event Timer

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in

synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

WHEA Support

Select Enabled to enable the Windows Hardware Error Architecture (WHEA) support for the Windows 2008 or a new OS. The options are **Enabled** and Disabled.

▶Intel Server Platform Services

The following Intel Server Platform Services configuration settings will be displayed:

- ME (Management Engine) BIOS Interface Version
- SPS Version
- ME FW (Firmware) Status Value
- ME FW State
- ME FW Operation State
- ME FW Error Code
- ME NM FW Status Value
- BIOS Booting Mode
- Cores Disabled
- ME FW SKU Information
- End-of-POST Status

▶Trusted Computing Configuration (Available when a TPM Device is Detected and TPM Jumper is Enabled)

Configuration

Security Device Support

Select Enable for the AMI BIOS to automatically download the drivers needed to provide Trusted Computing platform support for this machine to ensure date integrity and network security. The options are **Disable** and Enable.

TPM State

Select Enabled to use TPM (Trusted Platform Module) settings for system data security. The options are **Disabled** and Enabled.

Note: The system will reboot for the change on TPM State to take effect.

Pending Operation

Use this item to schedule a TPM-related operation to be performed by a security device for TPM support. The options are **None**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

Note: The computer will reboot to carry out a pending TPM operation and change TPM state for a TPM device.

Current Status Information

This feature indicates the status of the following TPM items:

TPM Enabled Status

TPM Active Status

TPM Owner Status

Intel TXT (LT) Support

Intel TXT (Trusted Execution Technology) helps protect against software-based attacks to ensure the security, confidentiality, and integrity of all data stored in the system. The options are Enabled and **Disabled.**

▶Super IO Configuration

Super IO Chip NCT6776D

▶Serial Port 1 Configuration

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Change (Serial Port 1) Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12) and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

▶Serial Port Console Redirection

COM1/SOL

Use this feature to enable console redirection support for COM1 and SOL ports. The options are Enabled and Disabled. The default setting for COM1 is **Disabled**. The default setting for SOL is **Enabled**.

▶Console Redirection Settings

This feature allows the user to specify how the host computer will interface with the client computer on a remote site.

Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, VT100+, and **VT-UTF8**. (The default setting for COM1/SOL is **VT100+**.)

Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 Bits and **8 Bits**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled**.**

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this feature to select the number of rows and columns used in Console Redirection for legacy OS support. The options are **80x24** and 80x25.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST (Power-On Self Test). When this item is set to Bootloader, Legacy Console Redirection is disabled before OS initialization. When this item is set to Always Enable, Legacy Console Redirection remains enabled during OS initialization. The options are **Always Enable** and Bootloader.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management.

EMS Console Redirection

Select Enabled to use a COM Port selected by the user for Console Redirection. The options are **Disabled** and Enabled. When this item is set to Enabled, the following submenu will display:

▶Console Redirection Settings (for EMS)

This feature allows the user to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Out-of-Band Management Port

The feature selects a serial port used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote server. The options are **COM1** and SOL.

Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, VT100+, and **VT-UTF8**.

Bits Per Second

This item sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and in the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

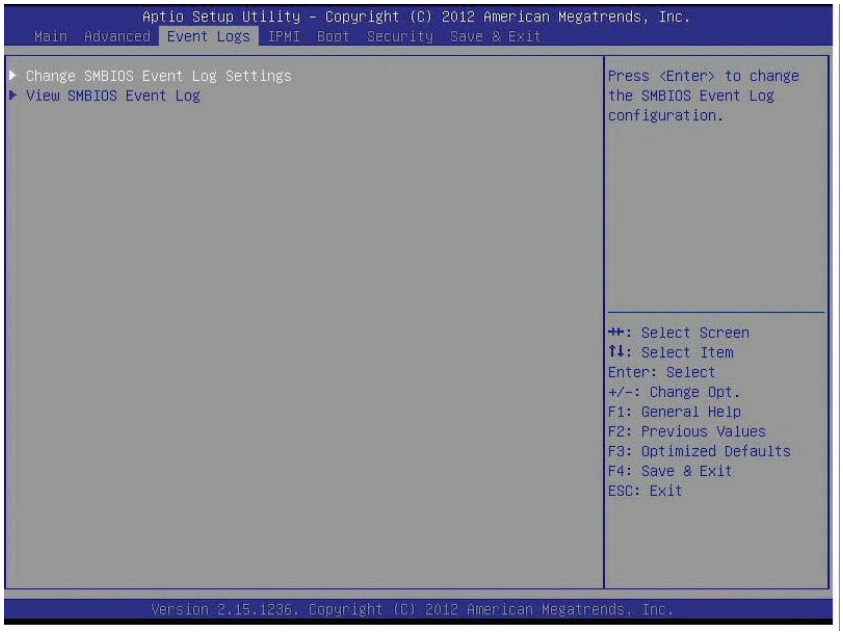
Flow Control

This feature allows the user to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None,** Hardware RTS/CTS, and Software Xon/Xoff.

Data Bits, Parity, Stop Bits

The setting for each of these features is displayed.

7-4 Event Logs


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Save & Exit
Change SMBIOS Event Log Settings
View SMBIOS Event Log
Press <Enter> to change the SMBIOS Event Log configuration.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

▶Change SMBIOS Event Log Settings

Enabling/Disabling Options

SMBIOS Event Log

Change this item to enable or disable all features of the SMBIOS Event Logging during system boot. The options are **Enabled** and Disabled.

Erasing Settings

Erase Event Log

If No is selected, data stored in the event log will not be erased. Select Yes, Next Reset, data stored in the event log will be erased upon next system reboot. Select Yes, Every Reset, data stored in the event log will be erased upon every system reboot. The options are **No**, Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately for all messages to be automatically erased from the event log when the event log memory is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Long Standard Settings

Log System Boot Event

This feature toggles the System Boot Event logging to enabled or disabled. The options are **Disabled** and Enabled.

MECI

The Multiple-Event-Count Increment (MECI) counter counts the number of occurences. A duplicate event must happen before the MECI counter is incremented. This is a numeric value. The default value is **1**.

METW

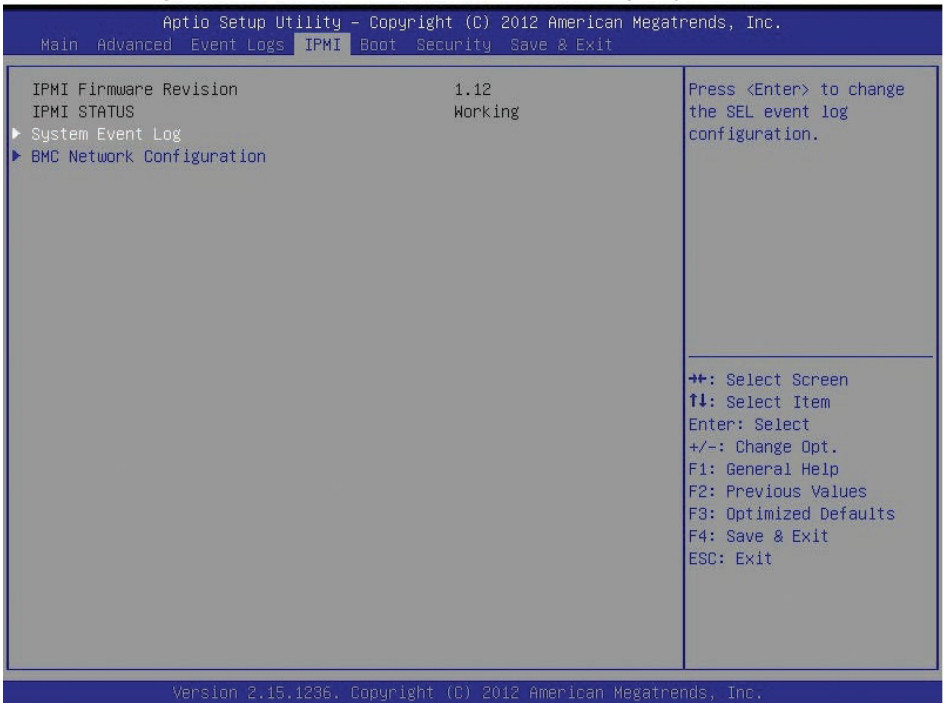
Use the Multiple-Event-Time Window (METW) to define the length of time (in minute) it must pass before a duplicate log-event entry is generated. Enter a number from 0 to 99. The default value is **60 (minutes)**.

▶View SMBIOS Event Log

This section displays the contents of the SMBIOS Event Log.

7-5 IPMI

The following IPMI information will be displayed:


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Save & Exit
IPMI Firmware Revision 1.12
IPMI STATUS Working
System Event Log
BMC Network Configuration
Press <Enter> to change the SEL event log configuration.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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- IPMI Firmware Revision
- IPMI Status

IPMI Firmware Revision

This item indicates the IPMI firmware revision used in your system.

Note: After making changes on a setting, be sure to reboot the system for the changes to take effect.

IPMI Firmware Revision

This item indicates the IPMI firmware revision used in your system.

IPMI Status

This item indicates the status of the IPMI firmware installed in your system.

▶System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled for all system event logging at bootup. The options are Enabled and **Disabled**.

Erasing Settings

Erase SEL

Select Yes, On next reset to erase all system event logs upon next system reboot. Select Yes, On every reset to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No,** Yes, On next reset, and Yes, On every reset.

When SEL is Full

This feature allows the user to decide what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

▶BMC Network Configuration

LAN Channel 1: This feature allows the user to configure the settings for LAN1 Port.

Update IPMI LAN Configuration

This feature allows the user to decide if the BIOS should configure the IPMI setting at next system boot. The options are **No** and Yes. If the option is set to Yes, the user is allow to configure the IPMI settings at next system boot:

IPMI LAN Selection

This feature allows the user to configure the IPMI LAN setting. The default setting is **Failover**.

IPMI Network Link Status

This feature displays the status of IPMI Network Link connections.

Configuration Address Source

This feature allows the user to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network that is attached to and request the next available IP address for this computer. The options are **DHCP** and Static. The following items are assigned IP addresses automatically if DHCP is selected, or can be configured manually if Static is selected.

Station MAC Address

This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

Station IP Address

This item displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

Subnet Mask

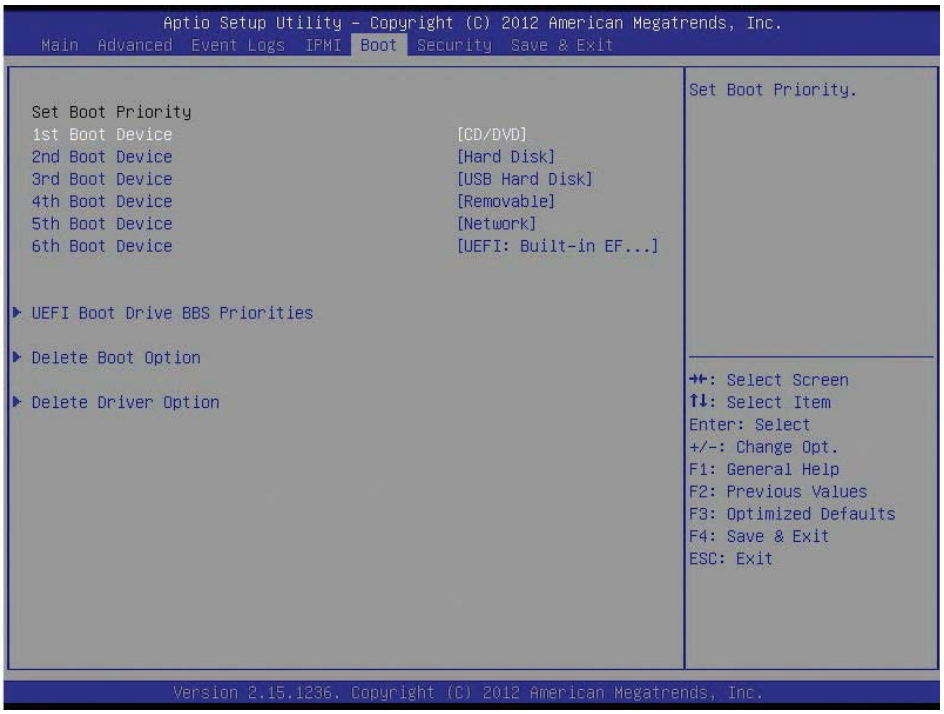
This item displays the sub-network that this computer belongs to. The value of each three-digit number separated by dots should not exceed 255.

Gateway IP Address

This item displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

7-6 Boot Settings

Use this feature to configure Boot Settings:


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Save & Exit
Set Boot Priority
1st Boot Device [CD/DVD]
2nd Boot Device [Hard Disk]
3rd Boot Device [USB Hard Disk]
4th Boot Device [Removable]
5th Boot Device [Network]
6th Boot Device [UEFI: Built-in EF...]
UEFI Boot Drive BBS Priorities
Delete Boot Option
Delete Driver Option
Set Boot Priority.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Set Boot Priority

This option prioritizes the order of bootable devices that the system to boot from. Press [ENTER] on each entry from top to bottom to select devices.

- 1st Boot Device
- 2nd Boot Device
- 3rd Boot Device
- 4th Boot Device
- 5th Boot Device
- 6th Boot Device

▶USB Hard Disk Drive BBS Priorities

- 1st Device
- 2nd Device

▶Network Device BBS Priorities

- 1st Device

▶UEFI Boot Drive BBS Priorities

- 1st Boot Device

▶Add New Boot Option

This feature allows the user to add a boot device from which the systems will boot after power-on.

Add Boot Option

Enter the name of the new boot option here.

Path for Boot Option

Enter the path of the new boot option here.

Create

Press Enter here to create the new boot option.

▶Delete Boot Option

Use this feature to remove a pre-defined boot device from which the system will boot during startup.

The settings are [any pre-defined boot device].

▶Add New Driver Option

This feature allows the user to add a boot device from which the systems boots during startup.

Add Driver Option

Enter the name of the new boot option here.

Path for Driver Option

Enter the path of the new boot option here.

Create

Press Enter here to create the new boot option.

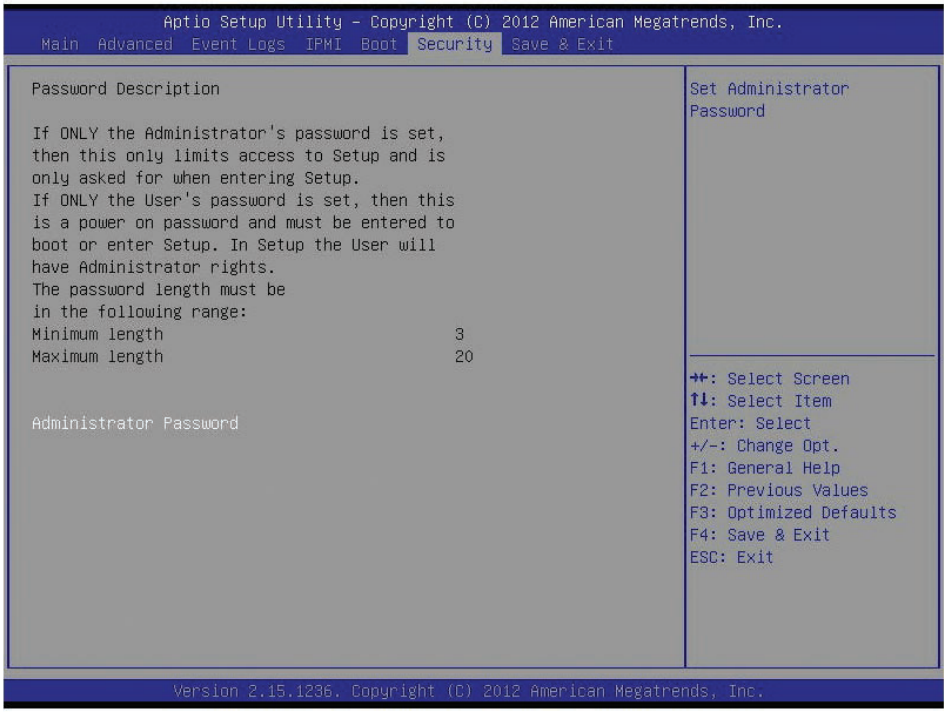
▶Delete Driver Option

This feature allows the user to delete a previously defined boot device from which the systems boots during startup.

The settings are [any pre defined boot device].

7-7 Security Settings

This menu allows the user to configure the following security settings for the system.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length 3
Maximum length 20
Administrator Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Administrator Password

Use this feature to set the Administrator Password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 8 characters long.

User Password (Available when an Administrator Password is set)

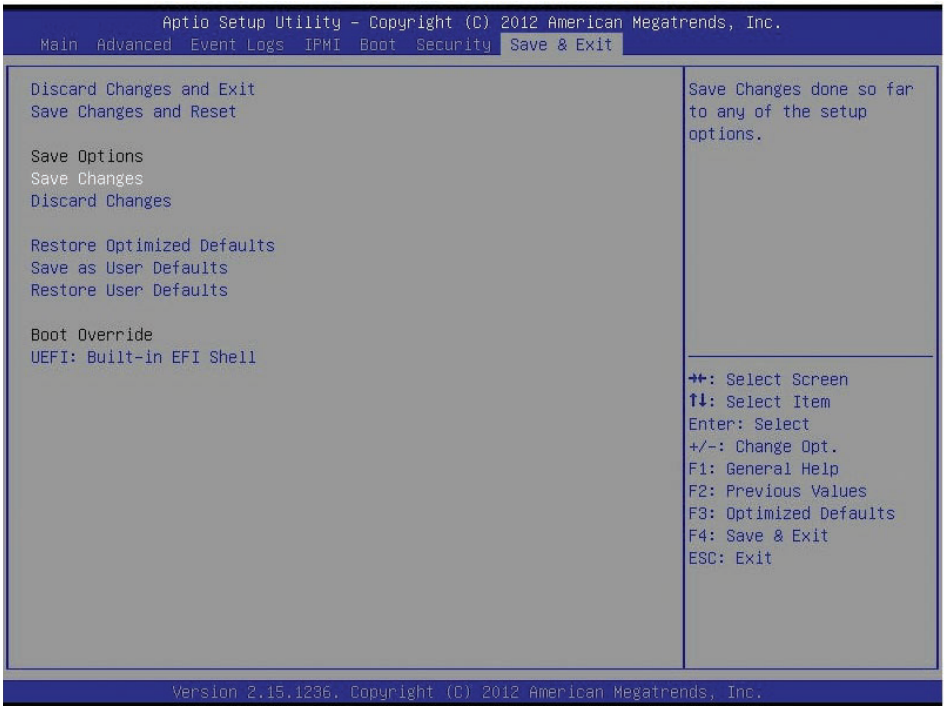
Use this feature to set the User Password which is required to enter the system or the BIOS setup utility. The length of the password should be from 3 characters to 8 characters long.

HDD Security (Available when an HDD is detected in the system)

Use this feature to set the security setting for the hard disk drive. Press Enter to create a new, or change an existing HDD password.

7-8 Save & Exit

Select the Exit tab from the BIOS Setup Utility screen to enter the Exit BIOS Setup screen.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Save & Exit
Discard Changes and Exit
Save Changes and Reset
Save Options
Save Changes
Discard Changes
Restore Optimized Defaults
Save as User Defaults
Restore User Defaults
Boot Override
UEFI: Built-in EFI Shell
Save Changes done so far to any of the setup options.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Discard Changes and Exit

Select this option to exit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Save Changes and Reset

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Save Options

Save Changes

When you have completed the system configuration changes, select this option to save any changes made. This will not reset (reboot) the system.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

Restore Optimized Defaults

To set this feature, select Restore Defaults from the Exit menu and press <Enter>. These are factory settings designed for maximum system stability, but not for maximum performance.

Save As User Defaults

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use.

Restore User Defaults

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

Listed on this section are other boot options for the system (i.e., Built-in EFI shell). Select an option and press <Enter>. Your system will boot to the selected boot option.

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue with bootup. The error messages normally appear on the screen.

Fatal errors will not allow the system to continue to bootup. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

BIOS Error Beep Codes

Beep Code/LED	Error Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	Display memory read/write error	Video adapter missing or with faulty memory
OH LED On	System OH	System Overheat

Notes

Appendix B

System Specifications

Processors

Each node supports a single Intel® Xeon® E3-1200 v3 processor (up to 80W) or 4th Gen Core i3, Pentium®, Celeron® processor in an LGA 1150 socket (Socket H3)

Note: Please refer to our web site for a complete listing of supported processors.

Chipset

Intel C224 PCH

BIOS

128 MB AMIBIOS® SPI Flash BIOS

Memory Capacity

Each node supports up to 32 GB of ECC DDR3-1600/1333 UDIMM (Unbuffered), VLP (Very Low Profile) memory (total of 384 GB for the system)

Note: See the memory section in Chapter 5 for details.

Hard Drives

Each node can be configured to house 2x 3.5” SATA 3.0 hard drives or four 2.5" SATA 3.0 hard drives (with extra MCP-220-93903-0N bracket)

Expansion Slots

Each node supports one MicroLP card

Note: See the Chapter 5 for details.

Motherboard

X10SLE-F (proprietary form factor)

Dimensions: 4.6" x 11.70" (11.68 x 29.72 cm)

Chassis

SC939H-R1K63BP (3U rackmount)

Dimensions: (WxHxD) 17.5 x 5.21 x 29.5 in. (444.5 x 132 x 749.3 mm)

Weight

Barebone: 95 lbs. (43.2 kg)

System Cooling

Four 9-cm system fans

System Input Requirements

AC Input Voltage: 100 - 240V AC auto-range

Rated Input Current: 11.5 - 5.5A max

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 1000W @ 100-120V, 1200W @ 120-140V, 1620W @ 180-240V (Part# PWS-1K63S-1R)

Rated Output Voltages: +12V (84A @ 1000W, 100A @ 1200W, 135A @ 1620W), +5Vsb (4A)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)

Non-operating Temperature: -40º to 70º C (-40º to 158º F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions:

FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity:

EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:

EN 60950/IEC 60950-Compliant

UL Listed (USA)

CUL Listed (Canada)

TUV Certified (Germany)

CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

(continued from front)

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